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## Analgesic Prescribing Practices Can Be Improved By Low-Cost, Point-of-Care Decision Support

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### Abstract

**Context**—Codeine has become a controversial choice for analgesia in children compared to other commonly available drugs.

**Objectives**—To evaluate whether an educational campaign shifted resident prescribing patterns away from codeine toward more appropriate analgesics.

**Methods**—Our intervention consisted of a pocket-sized reference card given to all trainees and key staff on an inpatient pediatric acute care unit; pediatrics residents also had the option to attend a one-hour lecture. The pocket-card recommended against codeine (including rationale), and gave prescription guidance for our institution's preferred formulary alternative analgesics, which included tramadol and hydrocodone. We used inpatient prescribing data to track the prescribing of codeine and alternative medications over time.

**Results**—Following the interventions, there was a significant decrease in the percentage of patients receiving codeine (13.5% of patients received the drug in the year before, 5.4% in the year after,  $P < 0.0001$ ). Use of hydrocodone-containing analgesics increased overall during the same period (7.4% to 16%,  $P < 0.0001$ ) as did tramadol use (0.2% to 2.6%,  $P < 0.0001$ ). There were no changes in pain management satisfaction scores.

**Conclusions**—A simple, low-cost educational campaign consisting primarily of a pocket guide to analgesics markedly improved analgesic prescribing patterns, and that improvement extended to services not targeted by the didactic component of our educational campaign. Point-of-care decision support via a pocket-card may be sufficient for effecting change in medication prescribing patterns of trainees.

### Keywords

Children; analgesics; codeine; trainees; point-of care reference

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#### Disclosures

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## Introduction

Pain is an extremely common symptom in hospitalized children (1, 2). Historically, there have been significant gaps in pain management in children, with less effective pain control in children as compared to adults (3). Among trainees, there is significant variation in knowledge and prescribing practices for analgesics (4).

Codeine is a commonly used analgesic for moderate pain, although its use may be problematic. It is a weak opioid that must be metabolized into the active metabolite, morphine. As many as 10% of Caucasian patients (higher in North African populations) are slow metabolizers of codeine and are at risk for inadequate analgesia. Another 1–2% of the population are ultra-rapid metabolizers and are, therefore, at risk for morphine intoxication for themselves (5) as well as breastfed infants (6). Based on this information, many experts recommend caution when prescribing codeine as well as a need for attention to the relevant pharmacogenetics (7). It is not currently practical to test for these polymorphisms in all patients who might receive codeine. Therefore, our institutional experts recommend use of oral analgesics with more uniform pharmacokinetics. These include hydrocodone and tramadol, among others.

Pocket-cards improve trainee knowledge in palliative care (8), as well as in antibiotic prescribing (9). They also have recently been shown to improve compliance with evidence-based guidelines for asthma management (10). However, few studies have examined the role of pocket-cards in changing inpatient analgesic prescribing practices for children.

Our goal was to create an educational campaign to improve analgesic prescribing practices in our Children's Hospital through the combination of lectures as well as pocket-sized prescribing reference cards. Our hypothesis was that after the educational campaign, there would be a decrease in codeine prescribing and an increase in the prescribing of recommended alternatives such as tramadol and hydrocodone.

## Methods

### Site and Subjects

Our study was carried out at the University of California San Francisco (UCSF) Children's Hospital, a 175-bed tertiary care facility. Children on the inpatient unit are cared for primarily on a pediatric hospitalist service (pediatric hospitalists with pediatrics trainees), a medical subspecialty service (pediatric subspecialists with pediatrics trainees), a pediatric general surgery service (pediatric surgeons with general surgery trainees), or a pediatric surgical subspecialty service (pediatric surgical subspecialists with subspecialty surgery trainees). Surgical trainees rotate on pediatrics services for two to six months over the course of their multi-year training, depending on their program.

We studied non-intensive care unit patients aged 0–18 on the primary inpatient medical-surgical unit. Approval for retrospective review with waiver-of-consent was approved by the UCSF Committee on Human Research.

### Intervention

Our intervention was an educational campaign comprising two main components: a one-hour lecture combined with a pocket-card containing specific analgesic prescribing information (Figure 1).

**Didactic Training on Pediatric Analgesic Prescribing**—Our lecture provided an overview of pain management in children, including traditional pharmacologic analgesics as

well as non-pharmacologic pain management strategies. Importantly, lectures provided a strong recommendation to avoid codeine-containing analgesics because of unpredictable pharmacokinetics. Hydrocodone-containing analgesics and tramadol were offered as enteral alternatives for patients with moderate pain.

The lecture was primarily targeted at pediatrics residents and was repeated, giving residents two opportunities to hear the lecture. Six months later, the lecture was given again as part of our Grand Rounds series with a slightly different target audience, including faculty and fellows. Attendance at lectures was not mandatory and attendance was not recorded. Based on rotation-assignments and timing of the lectures, we estimate that at least half of the pediatrics trainees attended one session. Less than one-half of the hospitalists attended a lecture, and less than one-quarter of subspecialty faculty or fellows attended. No faculty or trainees from the surgical departments attended.

**Prescribing Pocket-Card**—Our pocket-card was developed by two hospitalists, a pediatric anesthesiologist, a pediatric intensivist, and a pediatric clinical pharmacist. It included a stepwise approach to pain management modeled after the World Health Organization pain ladder (<http://www.who.int/cancer/palliative/painladder/en/>), as well as guidelines from national societies.

Key points on the card included information about the variable pharmacokinetics of codeine, a strong recommendation to avoid prescribing codeine, and guidance for how to prescribe non-opioids, opioids, and combination-opioid preparations (including considerations of contraindications, side effects, etc.). The pocket-card also included guidance regarding maximum acetaminophen dosing, including acetaminophen-containing combination analgesic preparations.

We distributed the pocket-card to pediatrics trainees via their intercampus mailboxes and to surgical trainees via clinical pharmacists at the beginning of their rotations on the pediatrics services. The card also was given to hospitalist attending physicians, clinical pharmacists, and key nursing staff. Clinical pharmacists were advised to use the pocket-cards to make recommendations when asked. Medication safety nurses checked written orders against the pocket-cards to verify safe dosing. We made no changes to the formulary or the availability of clinical pharmacists in making recommendations when asked. The study was designed post-hoc and, therefore, none of the care providers could have known that they were being studied.

## Outcomes

Our primary outcome was analgesic prescribing practices. Using prescribing data, we determined whether patients had been prescribed any of our targeted analgesics (codeine-containing combination products, hydrocodone-containing combination products, and tramadol) as well as any of the following non-targeted analgesics: acetaminophen, ibuprofen, ketorolac, morphine, hydromorphone, and oxycodone-containing combination products.

Our secondary outcome was satisfaction with pain management, based on a parental satisfaction questionnaire.

## Data Sources

Data on medication prescribing were collected from electronic inpatient prescribing databases. These databases include the names of medications prescribed, as well as the date the drug was ordered. We reviewed data during the 12-month period prior to the start of the

intervention (7/1/07-6/30/08) and during the 12-month period beginning two months after the intervention (9/1/08-8/31/09).

Data describing parental satisfaction with pain control were collected through standard UCSF customer satisfaction surveys (administered by Press Ganey, a third party). These surveys are mailed to discharged patients, and they include a specific question assessing parental satisfaction with how well their child's pain was controlled. Data were obtained in month-level aggregated groups. Our key parental satisfaction question asked parents to score: "How well your child's pain was controlled," on a Likert scale from 1–5. The data were translated to a 100-point scale (Very Poor = 0, Poor = 25, Fair = 50, Good = 75, Very Good = 100).

## Data Analysis

We reviewed data for the entire unit, and also categorized patients based on admitting service to identify which residents were caring for the patients. For subgroup analysis, the pediatric hospitalist and pediatric medical subspecialty services were combined because all patients were cared for by pediatrics trainees. Surgical patients on the six high-volume subspecialties were grouped together (general surgery, plastic surgery, urological surgery, orthopedic surgery, neurosurgery, and otolaryngology head & neck surgery). The remaining services (see Appendix) were classified as "low-volume services."

We grouped the admission dates into three-month quarters for trending across the intervention time period. Chi-square analyses were performed to determine significant changes in prescribing and patient characteristics before and after the intervention. Analysis of variance was performed to determine if the mean number of analgesics prescribed changed after the intervention. All analyses were carried out in SAS version 9.2 (SAS Institute, Cary, NC).

## Results

### Study Population

During the 24-month period, there were 3901 admissions on our target inpatient unit (2413 medical, 989 high-volume subspecialties, and 499 low-volume specialties; categorization is described above) (Table 1).

### Trends in Targeted Analgesic Prescribing

Prescriptions for codeine-containing compounds decreased markedly over the study period (Table 2). The overall decrease was from 13.5% to 5% ( $P < 0.0001$ ). This trend was present on both the medical and high-volume subspecialty services. During this same time period, prescriptions for hydrocodone-containing compounds and tramadol increased significantly in all groups. For further review, we divided the pre- and post-intervention periods into three-month quarters (Figure 2).

### Trends in Non-Targeted Analgesics

Acetaminophen was the most commonly prescribed analgesic overall. After the intervention, it was still the most commonly prescribed but was used slightly less. Subgroup analysis showed that this trend was primarily driven by prescribing for the medical patients. In the high-volume subspecialties, there was an increase in acetaminophen prescribing.

Parenteral morphine was prescribed slightly more often after the intervention, but there was no significant change in enteral morphine or parenteral hydromorphone prescribing. Combined service data for all analgesics is shown in Table 3.

### Trends in Overall Analgesic Prescribing

Overall, there was a statistically significant decrease in analgesic doses prescribed during the study period. The percent of patients receiving any analgesic decreased from 71% in the pre-intervention period to 65% after the intervention ( $P<0.0001$ ). This was mirrored by a decrease in acetaminophen from 53% to 49% ( $P=0.0070$ ) (Figure 3).

After the intervention there was a slightly larger group of patients who were not prescribed any analgesic. However, there was no decrease in the average number of analgesics per patient ( $P=0.8925$ ). Detailed data are shown in Table 4.

### Trends in Naloxone Prescribing

During the study period, naloxone prescribing decreased from 1.2% to 0.5% of patients ( $P=0.0082$ ).

### Patient Satisfaction

Based on aggregated monthly data, the average parental satisfaction score for child's pain management was 83.8 pre-intervention and 84.4 post-intervention ( $P=0.6958$ ).

## Discussion

A simple campaign consisting primarily of a widely distributed reference card appeared to produce a marked improvement in analgesic prescribing patterns across all major prescribing practitioner groups on our inpatient unit. Specifically, we observed a decrease in the use of codeine-containing analgesics in favor of analgesics such as tramadol or hydrocodone. Moreover, our data suggest continued effects, implying that changes in practice may have continued over time.

Interestingly, improvements in analgesic prescribing were seen for patients who were cared for by trainees who did not have exposure to all components of the intervention (surgery residents did not participate in the lecture curriculum). The highly significant changes in prescribing practices in this group suggests that providing point-of-care decision support via a pocket-card may be sufficient for effecting change. Lectures may not provide additional benefit.

Some of our intervention's effectiveness may have been enhanced by our clinical pharmacists who also used the reference card. In our institution, clinical pharmacists round with the medical teams and co-follow all surgical patients. In addition, pharmacists review charts and may make unsolicited recommendations. The availability and role of clinical pharmacists was the same before and after the intervention.

Clinical pharmacists interacting directly and indirectly with prescribing physicians can contribute to improved prescribing practices in other settings (11). Most recommendations for surgical patients are reactive, based on order-review; therefore the decrease in codeine prescribing is unlikely to be due to the intervention on a patient-by-patient basis. At least one clinical pharmacist was involved in developing the card, and the cards were disseminated within that group. Therefore, we do believe that the card had a powerful impact that extended beyond the physician community to include the clinical pharmacists.

The trend toward an overall decrease in analgesic prescriptions is notable. While we have no direct evidence, it is possible that the decrease in analgesic usage overall was in part driven by increased attention to risk of acetaminophen overdosing in patients who also were prescribed an acetaminophen-containing combination product (the decrease in total analgesic usage was mirrored by the decrease in acetaminophen usage). At minimum, it is

clear that increased awareness of pain recommendations did not translate into increased prescribing of analgesics. We would have liked to document that there was no detrimental change in average pain scores during hospitalization or post-operative periods with these interventions. We are reassured that our parental satisfaction scores did not worsen during our study period.

The decrease in naloxone prescriptions is likely multifactorial in origin. Direct chart review revealed that most naloxone that was prescribed was not actually administered. Naloxone is commonly prescribed prophylactically for patients who receive patient-controlled analgesia (PCA). This study was not designed to evaluate changes in PCA usage. However, we believe that the decrease in naloxone usage reflects a higher level of comfort and safety with analgesics prescribed after the intervention.

The study has several important limitations. The intervention was originally designed as a bundled educational and practice-improvement program. As such, there was no true control group and we were limited in the data available to us for our retrospective study. We cannot document the degree to which target trainees got the full intervention because attendance was not taken at the lecture. Because of the natural turnover in our Graduate Medical Education program, front-line prescribers during the pre-intervention year were not the same as in the intervention period and post-intervention year. Some residents (particularly non-pediatrics residents) might not have received the reference card or might not have carried it. However, prescribing by trainees who did not carry the card may have been impacted by pharmacists and nurses who had access to the card and made recommendations.

Analgesic choice is dependent on many factors, including input from attending physicians. There is an emerging literature on “physician champions,” (12) and we did not track which attending physicians were involved in the choice of analgesic. Individual physician champions may have had a small impact before our formal intervention began. Our data were collected from the inpatient pharmacy prescribing database because the goal was to track what trainees are actually prescribing. Although we cannot verify whether or not patients actually received the ordered medications, we were able to document that the prescribing practices changed.

We have shown that trainee prescribing practices can be improved by distributing reference cards. Prescribing recommendations as well as advisory notes for specific analgesics are ideally addressed with Computerized Provider Order Entry (CPOE) systems. However, many hospitals still have not successfully implemented CPOE programs. In these settings, quick-reference point-of-care decision support tools such pocket-sized reference cards have significant advantages. Cards are inexpensive, can be customized to reflect institutional formularies, can provide advisories specific to various patient populations, and can provide additional resources to providers.

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**Guide to Initial Management of New-Onset Pain**  
(not intended for use in neonates)

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**Quick Guide:**

	Oral options	IV options
<b>Step 1</b> (mild pain)	Acetaminophen or Ibuprofen	
<b>Step 2</b> (moderate pain)	Tramadol (Ultram®) or Acetaminophen with Hydrocodone	Ketorolac (Toradol®)
<b>Step 3</b> (severe pain)	Oxycodone or Acetaminophen with Oxycodone <i>May use Ketorolac or Ibuprofen in addition to an opiate</i>	Morphine or Dilaudid

Patients who cannot take oral meds may get rectal acetaminophen or start at Step 2 or 3.

**Codine is NOT a recommended pain medication.**

- Metabolism to the active form is inefficient, producing many side-effect-inducing metabolites
- 10% of patients lack the enzyme to metabolize codine and thus get no analgesia
- 1-2% of patients are ultra-rapid metabolizers, and may suffer severe opiate intoxication

**Dosing & Precautions:**

**Step 1**

**Acetaminophen (Tylenol®)** 15mg/kg/dose PO/PR q4h ATC gr q4h PRN pain  
Max acetaminophen = 75mg/kg/DAY (5 doses/day); 1 gram/dose, 4 grams/day

**Ibuprofen (Advil/Motrin®)** 10mg/kg/dose PO q4h ATC or q4h PRN pain  
Max ibuprofen = 800 mg/dose  
Consult attending for acetaminophen and ibuprofen in oncology patients

**Step 2**

**Tramadol (Ultram®)** 1-2 mg/kg/dose PO q4h ATC gr q4h PRN pain (max 4 doses/day)  
Max dose = 100 mg/dose (400 mg/day)  
• Seek guidance before ordering for patients taking SSRIs or TCAs

**Acetaminophen with Hydrocodone (order based on hydrocodone content)**  
0.2mg hydrocodone/kg/dose PO q4h ATC gr q4h PRN pain (max 5 doses/day)  
Max initial hydrocodone dose = 10mg/dose; Max acetaminophen = 75mg/kg/DAY

Dosage Forms	Hydrocodone	Acetaminophen
Vicodin® Tablets	5mg	500mg
Lorabid® Tablets	10mg	500mg
Narco® Tablets	10mg	325mg
Lorabid® Elixer	2.5mg/dml	167mg/dml

**Step 2 (cont.)**

**Ketorolac (Toradol®)** For use ≤ 5 days  
0.5mg/kg/dose IV q4h ATC gr q4h PRN pain. Max = 30mg/dose  
Can also be given as a single dose: 1mg/kg IV x 1 up to max of 30mg

- Always give an IV shocker or PRN with Ketorolac
- Use caution in oncology patients or others at risk for bleeding
- Consult primary team before using in surgical or orthopedic patients
- Do not use in vascular disease patients or those with renal injury or disease
- Do not combine with oral NSAIDs

**Step 3**

**General Guidelines for Use of Strong Opiates:**

- For opiate naive patients, start low and re-assess frequently
- Inferno the attending whenever ordering strong opiates ATC
- Use caution in patients with lung or airway disease or neurologic disability
- For patients already on an opiate, seek additional dosing guidance

**Oxycodone** 0.1-0.15mg oxycodone/kg/dose po q4h ATC gr q4h PRN pain  
Max initial oxycodone = 5mg/dose

**Acetaminophen with Oxycodone (base dosing on oxycodone content)**  
0.1-0.15mg oxycodone/kg/dose po q4h ATC gr q4h PRN pain (max 4 doses/day)  
Max initial oxycodone = 5mg/dose. Max acetaminophen = 75mg/kg/DAY

Dosage Forms	Oxycodone	Acetaminophen
Tablet (Percocet®)	5mg	325mg
Liquid (Percocet®)	5mg/ml	325mg/ml

**Morphine Sulfate** 0.05-0.1mg/kg/dose IV q4h ATC gr q2h PRN pain  
Max initial dose for patients <30kg = 2mg/dose IV  
Max initial dose for patients >30kg = 3mg/dose IV  
• The max doses are for treatment of acute pain and may not be appropriate for other circumstances (e.g. preparation for a procedure)

**Hydromorphone (Dilaudid®)** 0.015mg/kg/dose IV q4h ATC gr q3h PRN pain  
Max initial dose = 0.6 mg/dose IV

**Methadone and Fentanyl should only be used with attending guidance.**

**Resources for Consultation:**

- Pain Control Service (Pain) 301-355-2000
- Pediatric Sedation & Pain Resource Team 301-355-2000
- Pediatric Critical Pharmacology (designated to each team)
- Pediatric Intensive Care Unit 301-355-2000
- Rapid Response Team 301-355-2000 (via Access Center)

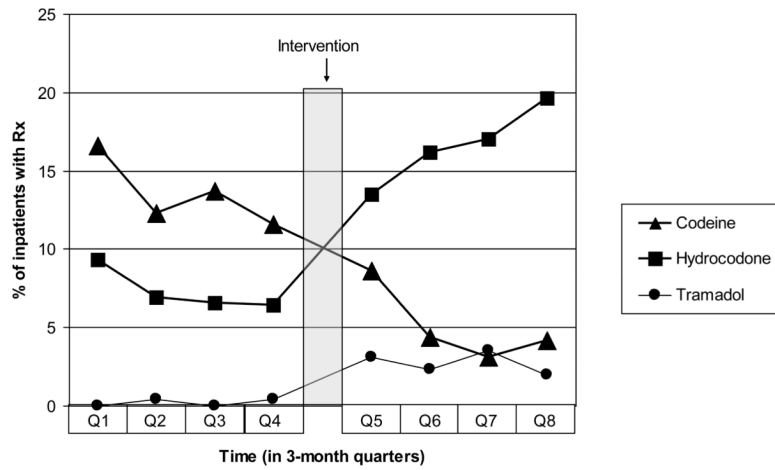
**Naloxone (Narcan®) Dosing:**

**Opiate Intoxication (overdosing)**  
0.01mg/kg IV, repeat q 2-3min as needed for desired effect

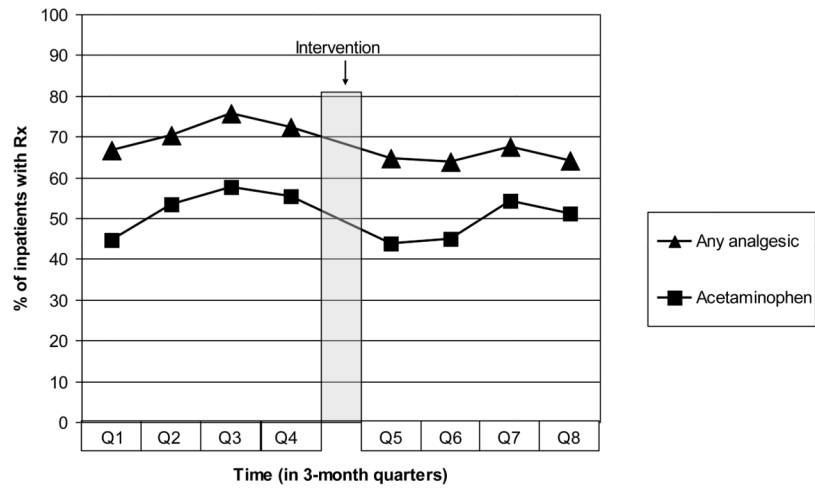
**Respiratory Arrest (code blue):**  
0.1mg/kg (max 2mg) IV or IM  
Always notify attending if Narcan is given

Fig. 1. Analgesic reference card given to trainees.





**Fig. 2.** Prescribing trends of targeted analgesics by quarter, for one year before and one year after the intervention, represented as percent of patients who received each analgesic. Triangles represent codeine prescribing, for which prescribing decreased significantly over the study period. Squares represent hydrocodone-containing analgesics and circles represent tramadol, both of which had significantly increased prescribing.



**Fig. 3.** Trend in prescribing any analgesic compared to trend in prescribing acetaminophen, for one year before and one year after the intervention, represented as percent of patients who received each analgesic. Triangles represent the percent of patients prescribed any analgesic, and squares represent acetaminophen. Both lines followed similar trends over time.

**Table 1**

## Patient Demographics

	Pre (n=1897) n (%) <sup>a</sup>	Post (n=2004) n (%) <sup>a</sup>
Age mean (SD)	9.0 (5.7)	8.8 (5.7)
Gender		
Male	974 (51.3)	1044 (52.1)
Female	923 (48.7)	960 (47.9)
Race		
White	767 (40.4)	788 (39.3)
Black	133 (7.0)	128 (6.4)
Asian	204 (10.8)	179 (8.9)
Other	735 (38.8)	855 (42.7)
Missing	58 (3.1)	54 (2.7)
Ethnicity		
Hispanic	651 (34.3)	660 (32.9)
Payer type		
Medicare	44 (2.3)	68 (3.4)
Medi-CAL/Medicaid	989 (52.1)	989 (49.4)
Private	841 (44.3)	922 (46.0)
Other	23 (1.2)	25 (1.3)
Admit source		
ED	475 (25.0)	494 (24.7)
Outside hospital	151 (8.0)	143 (7.1)
Direct admit/other	1271 (67.0)	1367 (68.2)
Disposition		
To home	1880 (99.1)	1979 (98.8)
Died	3 (0.2)	6 (0.3)
Other	14 (0.7)	19 (1.0)
Admit service		
Medical	1187 (62.6)	1226 (61.2)
High-volume subspecialties	480 (25.3)	509 (25.4)
Low-volume subspecialties	230 (12.1)	269 (13.4)

Note: There was no statistically significant difference between the patients before and after the intervention.

<sup>a</sup> All *P*-values >0.05.

**Table 2**Patients Prescribed a Targeted Analgesic<sup>a</sup>

Analgesic	Group	Pre- intervention n (%)	Post- intervention n (%)	P-value
Codeine (including combination products)	All patients	256 (13.5)	120 (5.1)	<0.0001
	Medical service	49 (4.3)	8 (0.7)	<0.0001
	High-volume subspecialties	199 (41.5)	93 (18.3)	<0.0001
Hydrocodone (including combination products)	All patients	138 (7.3)	332 (16.6)	<0.0001
	Medical service	37 (3.1)	91 (7.4)	<0.0001
	High-volume subspecialties	81 (16.9)	218 (42.8)	<0.0001
Tramadol	All patients	4 (0.2)	55 (2.7)	<0.0001
	Medical service	3 (0.3)	46 (3.8)	<0.0001
	High-volume subspecialties	0	7 (1.4)	0.0156

<sup>a</sup>Percent of patients in subgroups who were prescribed targeted analgesics, showing that after the intervention there was a decrease in prescribing of codeine-containing analgesics and an increase in hydrocodone-containing analgesics and tramadol.

**Table 3**

## Patients Prescribed Any Analgesic or Naloxone

Medication	Pre-intervention (n=1897) n (%)	Post-intervention (n=2004) n (%)	P-value
Hydrocodone (including combination products)	138 (7.3)	332 (16.6)	<0.0001
Acetaminophen	1003 (52.9)	973 (48.6)	0.0070
Codeine (including combination products)	256 (13.5)	102 (5.1)	<0.0001
Ibuprofen	194 (10.2)	204 (10.2)	0.9613
Ketorolac	69 (3.6)	78 (3.9)	0.6761
Oxycodone (including combination products)	24 (1.3)	29 (1.5)	0.6237
Tramadol	4 (0.2)	55 (2.7)	<0.0001
Morphine/parenteral	460 (24.3)	541 (27.0)	0.0496
Morphine/enteral	20 (1.1)	14 (0.7)	0.2322
Dilaudid/parenteral	170 (9.0)	172 (8.6)	0.6760
Dilaudid/enteral	14 (0.7)	4 (0.2)	0.0131
Any analgesic	1355 (71.4)	1303 (65.0)	<0.0001
Naloxone	23 (1.2)	9 (0.5)	0.0082

**Table 4**

## Average Number of Analgesics Per Patient

Patients receiving:	Pre n(%)	Post n(%)
0 analgesics	542 (28.6)	701 (35.0)
1 analgesic	716 (37.7)	576 (28.7)
2 different analgesics	408 (21.5)	395 (19.7)
3 different analgesics	147 (7.8)	227 (11.3)
4 different analgesics	51 (2.7)	76 (3.8)
5 different analgesics	25 (1.3)	21 (1.1)
6 different analgesics	6 (0.3)	8 (0.4)
7 different analgesics	2 (0.1)	0
Mean # of analgesics per patient	1.24 (1.15)	1.25 (1.24)

Note: There was no statistically significant change.

**Appendix**

Patient Categories

Medical (n=2413)	High-Volume Pediatric Subspecialties (n=989)	Low-Volume Pediatric Subspecialties and Boarders (n=499)
General pediatrics	General surgery	Kidney transplant
Pulmonology	Plastic surgery	Liver transplant
Adolescent medicine	Urology	AGS
Gastroenterology	Orthopedic surgery	Cardiology
Endocrinology	Neurosurgery	CTS
Neurology (non-EEG)	Otolaryngology/Head & Neck surgery	Gynecology
Rheumatology		GYO
Immunology		INN
Nephrology		IVR
		MED
		Neonatology
		Neurology (EEG)
		OBX
		Ophthalmology
		OSX
		Vascular surgery
		Well-baby