Low Usage of Analgesics for Pediatric Concussion-Related Pain in US Emergency Departments Between 2007 and 2015

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Objective To estimate the proportion of pediatric patients with a concussion who received analgesia when presenting with pain to US emergency departments, and to describe the analgesics used.

Study design This was a repeated cross-sectional analysis study using the National Hospital Ambulatory Medical Care Survey database of nationally representative emergency department visits from 2007 to 2015. We included children under 18 years old with isolated concussions. Survey weighting procedures were applied to generate population-level estimates and to perform multivariable logistic regression to identify factors associated with analgesic administration.

Results There were an estimated 1.54 million isolated concussion visits during the 9-year study period. Pain at presentation was reported frequently (78%), with the majority rated as moderate (36%) or severe (27%). Among all children reporting pain, 42% received no analgesics, including 40% with moderate-to-severe pain intensity. Multivariable analysis found younger age, male sex, and treatment in a nonacademic hospital were all negatively associated with analgesic administration. The medications most frequently administered were acetaminophen (54%), nonsteroidal anti-inflammatories (44%), and opioids (13%).

Conclusions Analgesic medications seem to be underused in the treatment of pediatric concussion-related pain. Following acetaminophen and nonsteroidal anti-inflammatories, opioids, which are not recommended for this condition, were the most frequently prescribed analgesics. Further research should establish optimal, consistent, and responsible pain management strategies for pediatric concussions. *(J Pediatr 2019;210:20-5)*.

Pediatric concussions are common and cause a variety of symptoms leading to potentially debilitating physical, cognitive, social, and/or emotional complaints.[1-3] Emergency department (ED) visits for pediatric concussion have increased markedly over the last decade,[4-6] accounting for 239 visits per 100 000 person-years.[6] For children sustaining concussions, headache is among the most common presenting symptoms.[7]

The American Academy of Pediatrics considers offering pain treatment to children a vital part of ED care.[8] Moreover, recent guidelines from the Centers for Disease Control and Prevention (CDC) on the management of pediatric mild traumatic brain injury highlight the importance of treating concussion pain and recommend the use of nonopioid analgesia.[9] Despite knowledge of its significant impact on child and adolescent functioning, there is a paucity of evidence to inform strategies for postconcussion analgesia,[4,10,11] and no well-designed clinical trials defining optimal management.

Using a nationally representative sample of US ED visits, the aim of this study was 2-fold: to estimate the proportion of pediatric patients with a concussion presenting with pain who receive analgesics and to describe the medications used to treat concussion-related pain.

Methods

Study Design, Setting, and Sample

A repeated cross-sectional analysis was performed using the National Hospital Ambulatory Medical Care Survey (NHAMCS) ED database from 2007 to 2015. The NHAMCS is conducted annually by the National Center for Health Statistics of the CDC. Using multistage probability sampling, the NHAMCS ED database contains information from a national sample of more than 30 000 randomly selected patient visits per year to approximately 300 US EDs. The

CDC	Centers for Disease Control and Prevention
ED	Emergency department
NHAMCS	National Hospital Ambulatory Medical Care Survey
NSAID	Nonsteroidal anti-inflammatory drug

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basic sampling unit of the NHAMCS is a single patient visit or unweighted observation. Each visit is assigned a statistical sampling weight, in order to generate unbiased, nationally representative population-level estimates.[12-14] Because the NHAMCS data are deidentified and publicly available, this study was exempt from review by the Research Ethics Board of the McGill University Health Centre.

All patients less than 18 years of age presenting to the ED with a diagnosis of concussion or post-traumatic headache were included. Discharge diagnoses were identified using codes from the *International Statistical Classification of Diseases and Related Health Problems, Ninth Revision, Clinical Modification* (codes 850.x or 339.2). To avoid confounding by indication for pain treatment, patients with codes relating to any concomitant injuries or infections (eg, fracture, laceration, otitis media) were excluded. Thus, patients with pain were presumed to have concussion-related headache. A list of excluded diagnostic codes can be found in **Table I** (available at www.jpeds.com). Analysis was restricted to patients for whom an injury was indicated using the question "Is this visit related to an injury?", a variable available in the NHAMCS. The period from 2007 to 2015 was selected for analysis to maximize uniformity among NHAMCS coding for the variables of interest.[13,15]

Variables and Data Processing

The primary outcome was the proportion of patients with a concussion presenting with pain and receiving analgesics in the ED. The secondary outcome was to determine which analgesics patients received in the ED. Additional data were collected on covariates chosen a priori based on previous studies demonstrating either a positive or negative association with analgesic administration,[8,16,17] including patient demographics (age, sex, race), triage acuity level, insurance provider, pain severity, and ED characteristics (academic and/or pediatric centers). Pain severity and vital signs at triage are recorded within the NHAMCS. Before 2009, pain was coded as unknown, none, mild, moderate, or severe; from 2009 onward, pain was coded as unknown or along a 0- to 10-point scale. For the purposes of our analysis, values of 0 were classified as no pain, 1-3 as mild, 4-6 as moderate, and 7-10 as severe according to the Stanford Comparative Pain Scale.[18] The NHMACS includes up to 8 medications for each patient visit. All medications were categorized first as analgesia or nonanalgesia. Analgesics were further categorized according to their class including acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), dopamine receptor antagonists, and opioids/opioid-containing analgesic formulations. Triage acuity level was categorized as immediate/emergent, urgent, semiurgent/nonurgent, or unknown. Insurance provider was categorized as private, Medicaid/Medicare, or other/unknown. Race was captured by NHAMCS site representatives as either white, black/African American, Asian, Native Hawaiian/other Pacific Islander, American Indian/Alaska Native, or more than 1 reported. Race is then recategorized within the NHAMCS as white, black, or other. The recategorized race variable was used for our analyses, dichotomized as white or non-white. An ED was considered academic if 25% or more of all patients were evaluated by a resident physician, and as pediatric if 85% or more of all visits were for patients younger than 21 years of age, as described previously.[19]

Statistical Analyses

Statistical analyses were performed in Stata v.14.1 (StataCorp, College Station, Texas) using appropriate sample weighting procedures to generate US national estimates by accounting for the NHAMCS survey design. Population estimates and percentages are expressed as survey-weighted counts and proportions with 95% CIs. In accordance with NHAMCS sample weighting procedures for reliable point estimates, grouping within levels of covariates (eg, non-white race, immediate/emergent triage acuity) was used to ensure estimates based on more than 30 unweighted observations and a relative SE of less than 30%.[12] Trends over time were analyzed using a Pearson χ^2 global test for differences among survey-weighted proportions. Multivariable logistic regression was used to identify predictors for analgesic treatment among children with concussion, adjusting for confounding by covariates shown previously to associate with the provision of analgesia and for which there was epidemiologic plausibility.[8,16,17] Covariates included in the multivariable model included patient age (modeled as a continuous variable), sex (modeled dichotomously), race (modeled dichotomously), triage acuity (modeled categorically), insurance provider (modeled categorically), pediatric and teaching hospital status (both modeled dichotomously), and pain severity (modeled categorically). Missing data were either imputed or recoded as unknown/unavailable within the NHAMCS database,[12] such that the multivariable model used a complete case regression analysis, which included all visits without missing values. A 2-sided P value of $< .05$ was considered statistically significant.

Results

Demographic Characteristics

During the 9-year study period, there were 59 921 nationally representative pediatric ED visits contained in the NHMACS database. Among these, a total of 317 unweighted observations met inclusion, representing an estimated 1 541 570% ED visits (95% CI, 1 265 040%-1 818 099%) by children and adolescents for isolated concussion, or approximately 171 000 ED visits per year. The median age was 12 years (IQR, 7-15 years); 82% of patients were white and 61% were male. More than 90% of patients were evaluated in nonacademic and nonpediatric centers (**Table II**).

Pain Severity and Analgesic Treatment

Pain severity data were available for 93% of visits (95% CI, 89.1%-95.5%). Among concussion patients with pain data available (244 unweighted observations), pain at triage was reported frequently (84.8%; 95% CI, 76.6%-91.0%), with a

Table II. Demographic characteristics of study population sample (n = 317 observations)

Characteristics	Population estimate, in hundreds of thousands	Percentage of visits (95% CI)
Age, years		
<7	4.06	26.3 (20.3-33.4)
8-<13	4.02	26.1 (20.6-32.4)
13-<18	7.34	47.6 (40.9-54.4)
Sex		
Male	9.46	61.4 (54.0-68.0)
Female	5.95	38.6 (32.0-45.7)
Race		
White	12.61	81.8 (75.5-86.8)
Non-white	2.80	18.2 (13.2-24.5)
Type of institution		
Academic	1.47	9.5 (6.2-14.4)
Nonacademic	13.95	90.5 (85.6-93.8)
Type of institution		
Pediatric	1.20	7.8 (4.4-13.4)
Nonpediatric	14.21	92.2 (86.6-95.6)
Triage acuity level		
Immediate/emergent	1.38	9.0 (6.1-13.0)
Urgent	5.82	37.8 (31.3-44.7)
Semiurgent/nonurgent	5.83	37.8 (31.0-45.1)
Unknown/unavailable	2.38	15.5 (10.0-23.1)
Insurance provider		
Private	7.69	49.9 (43.4-56.4)
Medicare/Medicaid	5.98	38.2 (31.5-45.5)
Other/unknown	1.83	11.9 (8.5-16.4)
Pain severity		
None	2.17	14.1 (8.8-21.9)
Mild	2.35	15.3 (10.5-21.7)
Moderate	5.62	36.4 (30.2-43.1)
Severe	4.19	27.2 (21.0-34.4)
Unknown	1.09	7.1 (4.5-10.9)

majority reporting either moderate (39.2%; 95% CI, 32.7%-46.1%) or severe (29.2%; 95% CI, 22.4%-37.2%) pain. Analgesic treatment did not differ by year of presentation to the ED (P_{trend} = 0.53). Overall, 41.7% of patients (95% CI, 32.3%-51.7%) reporting any pain were not provided analgesic medication (Table III). Although the proportion of patients receiving analgesic treatment increased with increasing pain severity, analgesia was not provided to 42.5% of patients (95% CI, 27.7%-58.8%) reporting moderate pain, and 36.4% of patients (95% CI, 24.3%-50.4%) reporting severe pain. Together, no analgesic treatment was received by 39.9% of patients (95% CI, 28.9%-52.0%) reporting moderate or severe pain.

Multivariable logistic regression was used to identify factors associated with receiving analgesia for concussion-related pain after adjusting for demographic- and ED-level covariates (Table IV). Multivariable analysis similarly found that increasing pain severity was associated with higher odds of analgesic treatment. Younger children were less likely to receive analgesia, with increasing odds of treatment for each additional year of life (aOR, 1.10; 95% CI, 1.03-1.16). Other factors associated with reduced analgesic treatment included male sex (aOR, 0.50; 95% CI, 0.25-0.99) and presentation to a nonacademic center (aOR, 0.46; 95% CI, 0.20-0.99).

Table III. Analgesic treatment among patients reporting pain (n = 244 observations)

Analgesias received	Population estimate, in hundreds of thousands	Percentage of visits (95% CI)
All patients reporting any pain		
Yes	7.09	58.3 (48.3-67.7)
No	5.07	41.7 (32.3-51.7)
Mild pain (VAS = 1-3)		
Yes	1.19	50.8 (32.4-68.9)
No	1.16	49.3 (31.1-67.6)
Moderate pain (VAS = 4-6)		
Yes	3.23	57.5 (41.2-72.3)
No	2.39	42.5 (27.7-58.8)
Severe pain (VAS = 7-10)		
Yes	2.67	63.6 (49.6-75.7)
No	1.52	36.4 (24.3-50.4)

VAS, Visual analog scale.

Analgesic Medications Administered

The most commonly used analgesics for postconcussion pain were acetaminophen and NSAIDs (ibuprofen or ketorolac), which were administered to 53.7% of patients (95% CI, 41.6%-65.4%) and 44% of patients (95% CI, 31.7%-56.8%), respectively. When analgesia was provided, acetaminophen or NSAIDs were administered to 87.8% of patients (95% CI, 80.5%-92.6%), and 9.7% of patients (95% CI, 5.3%-17.4%) received these medications in combination. Opioids (morphine, hydromorphone, or tramadol) or opioid-containing medications (acetaminophen plus hydrocodone, oxycodone, or codeine) were received by 13.1% of children (95% CI, 7.8%-20.9%) with concussions. Among patients receiving opioids, concomitant ED administration of either acetaminophen or NSAIDs was

Table IV. Predictors of analgesic treatment (n = 317 observations)

Covariates	aOR (95% CI)	*P* value
Age		
Per year	1.10 (1.03-1.16)	**.003**
Sex		
Male vs female	0.50 (0.25-0.99)	**.048**
Race		
White vs non-white	0.67 (0.24-1.86)	.451
Type of institution		
Nonacademic vs academic	0.46 (0.20-0.99)	**.049**
Nonpediatric vs pediatric	0.97 (0.36-2.58)	.957
Triage Level (all comparisons with semiurgent/nonurgent triage level)		
Immediate/emergent	1.15 (0.45-2.96)	.766
Urgent	0.61 (0.30-1.23)	.165
Unknown/unavailable	0.71 (0.27-1.87)	.489
Insurance provider (all comparisons vs other/unknown)		
Private insurance	0.95 (0.28-3.26)	.933
Medicaid/Medicare	0.98 (0.26-3.66)	.971
Pain severity (all comparisons vs no pain)		
Mild	2.75 (0.99-7.69)	.052
Moderate	3.65 (1.32-10.0)	**.012**
Severe	4.78 (1.82-12.55)	**.002**
Unknown	1.48 (0.43-5.20)	.533

Statistical significance indicated by bold font.

rare and below the limit of reliable estimation (<2.3%). The use of dopamine receptor antagonists (metoclopramide, promethazine, or prochlorperazine) was also infrequent (<3.2%), as was the use of intravenous fluids (<4.8%), with both below the limit of reliable estimation. Triptan class medications were not administered. A list of all administered medications can be found in **Table V** (available at www.jpeds.com).

Discussion

Using a large, nationally representative database, the present study found that children with isolated concussion frequently reported pain at presentation to the ED, with 40% of those reporting any pain not receiving analgesia. Importantly, nearly one-half of patients reporting moderate or severe pain intensity did not receive analgesic medications. Of those who did receive analgesia, a majority received either acetaminophen or NSAIDs, the 2 most commonly used and recommended analgesic medications in pediatrics,[20] and concussion specifically.[9] Notably, 13% of children received opioid-based medications. Recently published guidelines now clearly advise against using opiates in the treatment of concussion-related headache.[9]

In a 2014 survey of US pediatric ED physicians, 91% of respondents reported using medications to treat concussion-related pain.[21] In marked contrast, a cross-sectional analysis of ED and inpatient visits for concussion to 43 free-standing US Pediatric Hospitals between 2001 and 2010 reported that only one-third of children received analgesia.[22] A particular strength of the NHAMCS is the predominance of hospitals other than academic medical centers, which allows for a broader picture of practice patterns than the settings in which most published research occurs.[14] An earlier analysis of the NHAMCS ED dataset for pediatric patients with mild traumatic brain injury presenting to EDs across the US between 1998 and 2000 found that 45% of patients with pain received analgesic medication.[23] Findings from the present study suggest that little improvement has been made in this broader context. An apparent gap persists, with an unacceptably high proportion of children with pain, particularly moderate-to-severe pain, untreated in the ED setting.

Multivariable logistic regression analysis revealed that treatment in a nonacademic center was independently associated with lower odds of receiving analgesics. These centers may benefit particularly from targeted quality improvement initiatives aimed at improving the identification and treatment of pain in pediatric patients. Younger age and male sex were also negatively associated with analgesic treatment. This finding may relate to patient-level factors and both older children[16,23,24] and females[16,25] have been shown previously to more readily receive analgesia after a concussion. Of note, we found no difference in the rates of analgesic treatment between races, a finding that has not been consistently demonstrated in previous studies.[8,17]

Currently, there is a paucity of evidence to guide the use of pharmacotherapy in concussions.[9,26-28] As seen in previous studies, acetaminophen and NSAIDS were the most commonly used analgesic medications.[21-23,29] We found these medications were used in combination in only 10% of treated patients. In a recent open-label pilot study investigating the use of analgesics for pediatric concussion, the combination of acetaminophen and ibuprofen was found to have fewer headache days, fewer headaches per day, reduced headache intensity, and more early return to school.[30] This study was limited by a small number of participants and follow-up did not extend beyond 7 days. Further prospective data are required to validate the effectiveness of these medications in the treatment of concussion, as has been demonstrated previously for other pediatric conditions, such as musculoskeletal injury and surgery-related pain.[31,32] Providers should also caution families against the overuse of medications, which can lead to prolonged headache symptoms. In a retrospective chart review of patients presenting to a pediatric neurology headache clinic with chronic headaches and a history of concussion, persistent headache was attributed to medication overuse in 70% of patients.[33] Consideration should be given to striking a balance between pain control and analgesic overuse.

In the present study, dopamine receptor antagonists were used infrequently. In a recent prospective multicenter cohort study of pediatric patients with a concussion, metoclopramide was the most commonly used intravenous medication administered for acute concussion pain, although similarly infrequently.[34] Further pediatric studies examining the role of dopamine-receptor antagonists for acute concussion-related pain are needed.[11]

Importantly, 13% of patients in our study sample received opioid-based medications. This is nearly 2-fold higher than opioid rates described for pediatric concussion in earlier decades.[22,23] This finding is noteworthy in the context of the current national opioid crisis[35,36]; the literature suggests that opioids should not be used for any headache phenotype in the pediatric population owing to adverse effects[10,37] and the unclear risk for long-term addiction potential.[38,39] The higher rates of opioid use in this study are concerning and, in keeping with recently published guidelines,[9] unless clear benefit for concussion-related pain is established, this practice should not be routinely encouraged.

Our study had several limitations. Pain severity data were not available for all patients; accordingly, we included results regarding analgesic administration restricted to children with pain severity available. Pain data are also not recorded serially; therefore, we cannot determine the efficacy of specific analgesics, and that is beyond the scope of the present study. NHAMCS sample-weighting procedures for reliable point estimates require a minimum of 30 observations, which precluded more granular analyses of opioid use, such as annual trend, use by patient type, or use by pain severity. The NHAMCS documentation was modified in 2014 to include the question, "Did the injury/trauma, overdose, or

poisoning occur within 72 hours before the date and time of this visit?" Thus, for the majority of our sample, it is not possible to know how many visits were for acute concussions using the discharge diagnosis alone. We have not examined trends in NHAMCS data after 2015.[15] Our study relies on the quality of clinical data within the NHAMCS and the rigorous quality control measures implemented by the CDC to mitigate the possibility of misclassification or missing information.[13,14] We cannot exclude the possibility of unmeasured confounding in the multivariable regression analysis; however, this factor would not affect the reported population-level estimates for the primary outcome of analgesic administration. Despite the inclusion of only patients with a concussion without concomitant injuries, the available data do not permit assumptions about why certain patients did or did not receive treatment or the rationale for the medications selected. We cannot know the order of medication use in the ED, nor if ED prescribing was influenced by analgesics administered in the prehospital setting and/or use of other treatment modalities, such as rest, ice, or heat. Regarding low analgesic administration rates, it is possible that patient refusal may play a role, although this factor has been refuted in a previous study that demonstrated, if analgesics are offered, more than 90% of families will accept medication in the ED.[40] Finally, the exclusion of children with any painful concomitant injuries could limit the generalizability of our results.

Discussion

Analgesics seem to be underused in the ED treatment of pediatric concussion-related pain. Following acetaminophen and NSAIDs, opioids were the most frequently prescribed medications, which are not recommended for this condition. Findings suggest an important need for well-designed prospective studies to establish pain management needs in pediatric concussion as well as optimal, consistent, and responsible strategies for treatment. ■

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Data Statement

Data sharing statement available at www.jpeds.com.

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50 Years Ago in *The Journal of Pediatrics*

Tuberculin Testing in a Pediatric Outpatient Clinic

Weinberg H, Terry C. J Pediatr 1969;75:111-5.

In the 1960s, tuberculin tests were beginning to assume a role in mass screening for tuberculosis. During this time, tuberculin testing had extended from screening children in an outpatient clinic setting and was just beginning to undertake the school screening setting. The question at the time was if any trained medical personnel could perform the test, and how could you ensure that parents would report the results back to the clinic.

Weinberg and Terry concluded that it did not matter who applied the test as long as the instructions to the parents were clear. They also showed that the system for reporting the results back to the clinic improved when the mother was given a postcard to mail back to the clinic with the negative results. They also stated that to consider the tuberculin test a useful screening measure, it should be properly interpreted and recorded. They also supported the concept of this being a useful screening approach in a school program setting.

During the last 50 years, we have seen how tuberculin tests have become the cornerstone of early detection. These test are recommended and required by most school systems and well childcare settings; the effectiveness of the test has been proven and the benefit of early detection has been well established. The recommendations for reading the test have shifted from self-reporting by mail, to requiring the patient to return within 48-72 hours to have a trained health-care worker read the results. One aspect that has changed considerably during the past few years is that paramedical personnel are now applying the test. This saves time for medical personnel and allows more people to be trained and qualified to apply the test.

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Table I. List of excluded diagnostic codes

ICD-9-CM codes	Diagnosis	Unweighted counts
034.0	Streptococcal sore throat	1
079.99	Unspecified viral infection	1
382.9	Unspecified otitis media	1
461.0	Acute maxillary sinusitis	1
473.0	Chronic maxillary sinusitis	1
473.9	Unspecified chronic sinusitis	1
487.1	Influenza with other respiratory manifestations	1
577.0	Acute pancreatitis	1
599.70	Hematuria, unspecified	1
709.4	Foreign body granuloma of skin and subcutaneous tissue	1
719.41	Pain in joint, shoulder region	2
719.45	Pain in joint, pelvic region and thigh	1
719.46	Pain in joint, lower leg	2
723.1	Cervicalgia	7
724.8	Other symptoms referable to back	1
727.61	Complete rupture of rotator cuff	1
729.5	Pain in limb	2
729.6	Residual foreign body in soft tissue	1
729.90	Disorders of soft tissue, unspecified	1
756.11	Spondylolysis, lumbosacral region	1
780.6	Fever	1
780.60	Fever, unspecified	1
784.0	Headache	6
784.92	Jaw pain	1
786.50	Chest pain, unspecified	1
786.59	Other chest pain	1
789.09	Abdominal pain, other specified site	1
794.9	Non-specific abnormal results of other specified function study	1
799.89	Other ill-defined conditions	1
802.0	Closed fracture of nasal bones	2
802.6	Closed fracture of orbital floor (blow-out)	1
802.8	Closed fracture of other facial bones	1
808.8	Closed unspecified fracture of pelvis	1
810.00	Closed fracture of clavicle, unspecified part	2
810.03	Closed fracture of acromial end of clavicle	1
812.40	Closed fracture of unspecified part of lower end of humerus	1
813.44	Closed fracture of lower end of radius with ulna	1
813.81	Closed fracture of unspecified part of radius (alone)	1
844.9	Sprains and strains of unspecified knee and leg	3
847.0	Sprain of neck	14
847.9	Sprain of unspecified site of back	2
847.1	Sprain thoracic region	2
852.20	Subdural hemorrhage following injury without mention of complication	1
872.8	Open wound of ear, part unspecified, without mention of complication	1
873.0	Open wound of scalp	8
873.30	Open wound of nose, unspecified site, complicated	1
873.40	Open wound of face, unspecified site, without mention of complication	2
873.42	Open wound of forehead	3
873.43	Open wound of lip	1
873.44	Open wound of jaw	2
873.63	Open wound of tooth (broken) (fractured) (due to trauma), without mention of complication	1
873.8	Other and unspecified open wound of head without mention of complication	3
879.8	Open wound(s) (multiple) of unspecified site(s) without mention of complication	3
883.0	Open wound of finger	1
908.9	Late effect of unspecified injury	1
912.0	Abrasion shoulder/arm	1
913.0	Abrasion forearm	3
917.0	Abrasion foot and toe	1
919.0	Abrasion or friction burn of other, multiple, and unspecified sites, without mention of infection	10
921.2	Contusion orbital tissue	1
921.3	Contusion of eyeball	1
921.9	Unspecified contusion of eye	1
922.1	Contusion of chest wall	3
922.2	Contusion abdominal wall	2
923.00	Contusion of shoulder region	1
923.11	Contusion of elbow	1
923.20	Contusion of hand(s)	2
923.21	Contusion of wrist	1
923.9	Contusion of unspecified part of upper limb	1

(*continued*)

Table I. Continued

ICD-9-CM codes	Diagnosis	Unweighted counts
924.01	Contusion of hip	1
924.11	Contusion of knee	2
924.21	Contusion of ankle	1
924.8	Contusion of multiple sites, not elsewhere classified	4
924.9	Contusion of unspecified site	10
959.9	Unspecified site injury	1
959.01	Head injury, unspecified	1
959.09	Face and neck injury	3
959.8	Other specified sites, including multiple injury	1

ICD-9-CM, International Classification of Diseases, Ninth Revision, Clinical Modification.

Table V. List of administered medications

Medications	Unweighted counts
Acetaminophen	78
Ibuprofen	53
Ketorolac	10
Acetaminophen with hydrocodone	12
Acetaminophen with codeine	6
Acetaminophen with oxycodone	2
Tramadol	5
Morphine	5
Hydromorphone	1
Prochlorperazine	3
Metoclopramide	1
Promethazine	1
Lidocaine	3