Association of Emergency Department Opioid Initiation With Recurrent Opioid Use

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Study objective: Acute pain complaints are commonly treated in the emergency department (ED). Short courses of opioids are presumed to be safe for acute pain; however, the risk of recurrent opioid use after receipt of an ED opioid prescription is unknown. We describe the risk of recurrent opioid use in patients receiving an opioid prescription from the ED for an acute painful condition.

Methods: This is a retrospective cohort study of all patients discharged from an urban academic ED with an acute painful condition during a 5-month period. Clinical information was linked to data from Colorado's prescription drug monitoring program. We compared opioid-naive patients (no opioid prescription during the year before the visit) who filled an opioid prescription or received a prescription but did not fill it to those who did not receive a prescription. The primary outcome was the rate of recurrent opioid use, defined as filling an opioid prescription within 60 days before or after the first anniversary of the ED visit.

Results: Four thousand eight hundred one patients were treated for an acute painful condition; of these, 52% were opioid naive and 48% received an opioid prescription. Among all opioid-naive patients, 775 (31%) received and filled an opioid prescription, and 299 (12%) went on to recurrent use. For opioid-naive patients who filled a prescription compared with those who did not receive a prescription, the adjusted odds ratio for recurrent use was 1.8 (95% confidence interval 1.3 to 2.3). For opioid-naive patients who received a prescription but did not fill it compared with those who did not receive a prescription, the adjusted odds ratio for recurrent use was 0.8 (95% confidence interval 0.5 to 1.3).

Conclusion: Opioid-naive ED patients prescribed opioids for acute pain are at increased risk for additional opioid use at 1 year. [Ann Emerg Med. 2015;65:493-499.]

Please see page 494 for the Editor's Capsule Summary of this article.

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INTRODUCTION

Unintentional opioid overdoses have surpassed motor vehicle crashes as the leading cause of injury death in the United States. The majority of these deaths are from prescription opioids. Moreover, as the number of opioid prescriptions has increased, chronic opioid use and opioid dependence have become major public health issues in the United States.[1-4] Because opioids are frequently prescribed to patients discharged from the ED, it is important to understand the relationship between ED opioid prescribing and risk of progressing to recurrent opioid use. Ultimately, the ED may be an important site of intervention.[1,5]

The risk of recurrent opioid use after a single prescription has been assumed to be minimal[6,7]; however, a recent study reported that patients discharged from ambulatory surgery with a first-time opioid prescription are 44% more likely to fill additional opioid prescriptions 1 year after discharge compared with opioid-naive patients who did not receive an opioid prescription.[8] This raises the important question of whether ED opioid initiation for acute pain increases the risk of recurrent opioid use. To our knowledge, there have been no studies to date describing the risk of recurrent opioid use in a population of ED patients treated for acute pain. The objective of this study was to describe the risk of recurrent opioid use among ED patients initiating treatment with opioids.

MATERIALS AND METHODS

Study Design and Setting

This was a retrospective cohort study of all adult patients with an acutely painful diagnosis (see inclusion diagnoses below) who

Editor's Capsule Summary

What is already known on this topic

Opioid analgesics can create dependence and addiction.

What question this study addressed

Does emergency department (ED) opioid prescribing for acute pain increase the risk of future prescription opioid use in the next year?

What this study adds to our knowledge

In this review of more than 4,800 patients, 48% received an opioid prescription. Opioid-naive study patients who filled an opioid analgesic prescription were nearly twice as likely to receive a later opioid prescription compared with those who did not receive a prescription.

How this is relevant to clinical practice

Although shedding light on the pattern of opioid use after an ED visit for acute pain, these results highlight the need for better understanding of the role of this treatment in misuse or harm.

were discharged from the ED within a 5-month interval. The University of Colorado Hospital is an urban, academic ED with approximately 80,000 visits annually and an admission rate of 20%. All ED prescriptions are ordered electronically by an electronic medical record system: Epic 2010 (Epic Systems, Verona, WI).

Permission to access Colorado's prescription drug monitoring program was obtained from the Colorado Board of Pharmacy. Each patient's prescription-filling history in the year before and the year after the ED visit plus 60 days was recorded. Our prescription drug monitoring program tracks all dispensed prescriptions for controlled medications in the state except for prescriptions filled at federal sites, such as the Veterans Administration System and methadone programs. Prescription information is uploaded by pharmacies every 2 weeks for electronic retrieval by authorized users. Available prescription information includes provider name, date written, date dispensed, medication name and strength, quantity of pills, number of days prescribed, dispensing pharmacy, patient name and address, and method of payment. Our institutional review board approved the study and waived informed consent.

We evaluated all patients discharged from the ED from September 1, 2011, to February 1, 2012, with a common, acutely painful complaint. The discharge diagnoses investigated were dental or tooth pain, jaw pain, flank pain, abdominal pain, pelvic pain, back pain, neck pain, knee pain, headache, fracture, or sprain (Appendix E1 available on www.annemergmed.com). These categories were selected because they are likely to cause mild to moderate pain and are not expected to result in chronic painful conditions. Exclusion criteria included pregnancy, younger than 18 years, and admitted patients. Patients with multiple visits in the study period had only the initial visit included for analysis because we were primarily interested in opioid-naive patients and the association with recurrent opioid use. Considering multiple visits for a single patient may have resulted in a patient's being deemed both opioid naive and opioid non-naive within the study.

Methods of Measurement

Baseline demographic information and ED discharge prescriptions were abstracted from the electronic medical record by computer algorithm. We abstracted the following variables: chief complaint, age, sex, race or ethnicity, and insurance status. Race was coded as black, white, Hispanic, or other. Insurance status was coded as federal (Medicare or Medicaid), commercial, self-pay, medically indigent, and other (worker's compensation, Veteran's Affairs, or Child Health Plus). Chief complaints were categorized as abdominal or pelvic pain, back pain, chest pain, dental or ear, nose, and throat pain, extremity pain, head pain, other injury (eg, assault, motor vehicle crash), neck pain, and other complaint (eg, intoxication, lacerations, burns).

Each individual's prescription-filling data were abstracted manually from our state's prescription drug monitoring program (Health Information Designs LLC, Auburn, AL) by 1 study author (H.K., 45%) and 1 blinded assistant (55%), the former of whom trained the latter by using identical methodology. The prescription drug monitoring program database was queried by both name and date of birth; results were considered to be a match only if both criteria were fulfilled. Names that were similar (Matt and Matthew), differed trivially in spelling (Jennifer and Jenifer), or were hyphenated (Jones and Jones-Smith) were considered to be equivalent only if date of birth matched.

The information from the medical record and prescription drug monitoring program was merged into Research Electronic Data Capture (Vanderbilt, TN),[9] a secure Web-based application for building and managing online surveys and databases, and deidentified before analysis per our institutional review board requirements. Interrater reliability for manual prescription drug monitoring program abstraction between the 2 abstractors was assessed through double abstraction of 231 patients (10% of H.K.'s cases), using McNemar's test and κ coefficient. κ Values for interrater agreement of the outcomes of opioid-naive and recurrent opioid use were 0.99 and 0.96, respectively.

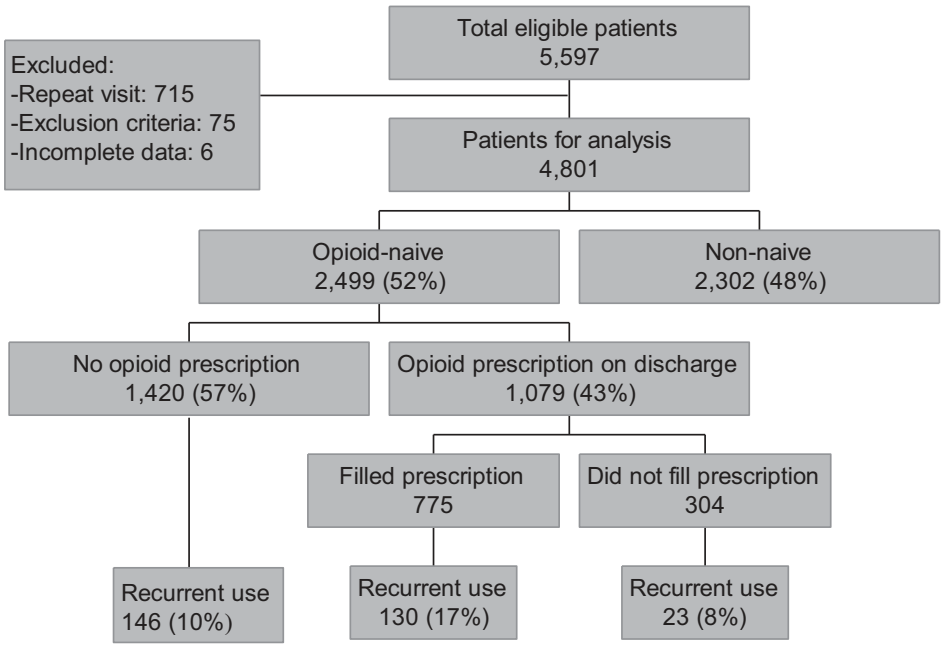

Figure. Patient inclusion diagram.

Opioid naive was defined as not filling an opioid prescription within 1 year before the index ED visit. *Non-naive* was defined as any patient who filled an opioid prescription in the 1-year period before index ED visit. We chose these definitions according to previous articles[8,10] because they have face validity, and in an attempt to minimize the inclusion of patients with preexisting chronic pain or cancer-related pain who present to the ED for an acute exacerbation of chronic pain.

We searched the prescription drug monitoring program database to determine whether the ED prescription was filled at any point in the year plus 60 days after discharge. ED prescriptions were identified in the database by matching both the prescribing date and prescriber name from the ED visit. We considered ED prescriptions not filled if either the patient was not found in the prescription drug monitoring program database or was found but the specific ED prescription from the visit date was not in the prescription drug monitoring program database. Thus, no patients were categorized as lost to follow-up because the prescription drug monitoring program does not provide a means to distinguish between patients who do not fill their prescriptions and those who are not identified by the queried information.

We divided the cohort of opioid-naive patients into 3 groups, using these definitions: those who received an opioid prescription at ED discharge and filled it, those who received an opioid prescription but did not fill it, and those who did not receive an opioid prescription. We chose to make a distinction between the first 2 groups to account for the expected difference in risk for recurrent opioid filling for patients who could not or would not fill their initial prescription.

Outcome Measures

The primary outcome was recurrent opioid use, defined as filling any opioid prescription within 60 days of the first anniversary of index ED visit (ie, 305 to 425 days after ED visit), as documented in the prescription drug monitoring program.

Primary Data Analysis

Preliminary data suggested that half our population of interest would be opioid naive and half of these would receive an opioid prescription. In accordance with this estimate, a sample size of 4,800 patients would have 80% power to detect a 50% increase in the risk of recurrent opioid use, assuming a baseline prevalence of 6% in those not prescribed opioids in the ED. The JMP Pro 11.0.0 software package (SAS Institute, Inc., Cary, NC) was used for all statistical analysis. We adjusted for all variables listed under methods of measurement. Nominal variables are presented as percentages with confidence intervals (CIs), and continuous variables are presented as means with SDs, or medians with interquartile ranges when appropriate. The odds ratios of recurrent use were compared with logistic regression to adjust for age, sex, race, insurance status, chief complaint, and opioid prescription filling. To limit colinearity in our model, we collapsed variables in preliminary models until our final model converged with variance inflation factors less than 5 for all variables (Appendix E1 available at www.annemergmed.com).

Table 1. Characteristics of opioid-naive and non-naive patients with minor pain complaints who were discharged from the ED.

Variable	Opioid-Naive*	Non-naive
N	2,499	2,302
Age, median (IQR), y	37 (27–50)	38 (28–50)
Male (%)	1,030 (41)	695 (30)
Race (%)		
Black	670 (27)	599 (26)
Hispanic	648 (26)	458 (20)
White	962 (39)	1147 (50)
Other	182 (7)	74 (3)
Missing	37 (1)	24 (1)
Insurance (%)		
Federal	580 (23)	897 (39)
Medically indigent	815 (33)	666 (29)
Private	564 (23)	434 (19)
Self	483 (19)	268 (12)
Worker's compensation, VA, CHP	57 (2)	37 (1)
Chief complaint (%)		
Abdomen/pelvic	705 (29)	718 (31)
Back	324 (13)	410 (18)
Chest	75 (3)	76 (3)
ENT/dental	89 (4)	65 (3)
Extremity	514 (21)	400 (17)
Head	269 (11)	215 (9)
Injury	286 (12)	197 (9)
Neck	51 (2)	52 (2)
Other	152 (6)	143 (6)
Missing	34 (1)	26 (1)
Recurrent use (%)	299 (12)	1,037 (45)

VA, Veterans Administration; *CHP*, Children's Health Plus Plan.
*Previous opioid use not recorded for 6 subjects.

Table 2. Characteristics of opioid-naive patients who did not receive a prescription, who received but did not fill a prescription, and who filled an opioid prescription.

Variable	No Rx	Not Filled	Filled
N	1,420	304	775
Age, median (IQR), y	35 (26–48)	42 (31–53)	39 (28–51)
Male (%)	538 (38)	133 (44)	359 (46)
Race (%)			
Black	410 (29)	78 (26)	182 (24)
Hispanic	378 (27)	89 (29)	181 (24)
White	501 (35)	103 (34)	358 (46)
Other	104 (7)	32 (11)	46 (6)
Missing	27 (2)	2 (0)	8 (1)
Insurance (%)			
Federal	369 (26)	57 (19)	154 (20)
Medically indigent	428 (30)	83 (27)	304 (39)
Private	318 (22)	76 (25)	170 (22)
Self-pay	278 (19)	77 (25)	128 (17)
Worker's compensation, VA, CHP	27 (2)	11 (4)	19 (2)
Chief complaint (%)			
Abdomen/pelvic (n=705)	500 (71)	70 (10)	135 (19)
Extremity (n=514)	196 (38)	92 (18)	226 (44)
Back (n=324)	123 (38)	39 (12)	162 (50)
Injury (n=286)	138 (48)	50 (18)	98 (34)
Head (n=269)	226 (84)	14 (5)	29 (11)
Other (n=152)	113 (74)	11 (7)	28 (19)
ENT/dental (n=89)	36 (40)	13 (15)	40 (45)
Chest (n=75)	49 (65)	4 (5)	22 (29)
Neck (n=51)	23 (45)	6 (12)	22 (43)
Missing (n=34)	16 (47)	5 (15)	13 (38)
Recurrent use (%)	146 (10)	23 (8)	130 (17)

No Rx, Patients who did not receive a prescription; *not filled*, patients who received but did not fill a prescription; *filled*, patients who filled an opioid prescription.

RESULTS

During the study period, there were 5,597 patients with an acute pain complaint discharged from the ED. Of these patients, 715 had repeated visits, 75 met the exclusion criteria, and 6 had incomplete data (Figure). The patients with missing data were identified after the data set had been encrypted to protect patient confidentiality and therefore were not reinvestigated. The remaining 4,801 patients were included in the cohort described in Table 1. There were 2,243 patients (47%) who received an opioid prescription on discharge.

Overall, 2,499 patients (52%) were opioid naive at the ED visit. These patients were included in our primary analysis and are described in Table 2. Among opioid-naive patients, the overall rate of recurrent use was 12% (299/2,499; 95% CI 11% to 13%). The rates of long-term risk were 17% (130/775; 95% CI 14% to 20%) for patients who filled their ED opioid prescription, 10% (146/1,420; 95% CI 9% to 12%) for patients who did not receive an opioid prescription on discharge, and 8% (23/303; 95% CI 5% to 11%) for patients who received but did not fill their ED opioid prescription.

The results of the logistic regression analysis are described in Table 3. For opioid-naive patients who filled a prescription compared with those who did not receive a prescription, the adjusted odds ratio for recurrent use was 1.8 (95% CI 1.3 to 2.3). For opioid-naive patients who received a prescription but did not fill it compared with those who did not receive a prescription, the adjusted odds ratio for recurrent use was 0.8 (95% CI 0.5 to 1.3).

LIMITATIONS

The retrospective, observational design of our study does not assess causation. The greatest threat to the internal validity of our findings is selection bias. In an ideal study, there would be no baseline differences in the characteristics of patients who were prescribed opioids and those who were not. Additionally, it is possible that some patients had more severe presentations of the selected acute painful conditions at ED presentation and this severity was associated with recurrent use. In anticipation of this, we purposefully selected low-acuity conditions not expected to cause recurrent pain, evaluated only patients whose pain levels permitted discharge with outpatient therapy, and adjusted for several potential characteristics that may be

Table 3. Odds ratios for recurrent opioid use among opioid-naive patients.

Variable	Odds Ratio	95% CI	
Age*	1.00	0.99	1.01
Male sex	0.80	0.61	1.04
Insurance			
Worker's compensation/VA	Reference		
Federal	0.70	0.34	1.57
Medically indigent	0.58	0.29	1.27
Private	0.56	0.27	1.25
Self-pay	0.24	0.11	0.57
Complaint			
Back	Reference		
Other	0.92	0.52	1.56
Abdomen/pelvic	0.70	0.48	1.03
Head	0.64	0.38	1.05
Injury	0.56	0.33	0.91
Extremity	0.43	0.28	0.66
Chest	0.43	0.16	0.98
Neck	0.40	0.11	1.04
ENT/dental	0.39	0.15	0.84
Race			
White	Reference		
Black	0.85	0.62	1.15
Other	0.72	0.42	1.17
Hispanic	0.58	0.40	0.82
Prescription			
None given	Reference		
Given, not filled	0.84	0.51	1.32
Given, filled	1.76	1.33	2.34

*Odds ratio is per year increase.

associated with both exposure and outcome. However, it is possible that there are residual differences in the groups that may affect our estimates for risk of recurrent use.

The external validity is limited by the use of a single center. Our population may differ from those at other centers; however, these complaints are common to emergency medicine. In the larger picture of assessing the effect of ED opioid prescribing, this study is limited by the inability to measure the efficacy of these opioid prescriptions for treating pain. Ideally, any assessment of the risk of misuse, abuse, and diversion of opioid prescriptions must be weighed against the benefit of their intended use.

We used the discharge diagnosis to select patients because they are codified and their data are therefore the best way to search. Unfortunately, some patients had several painful discharge diagnoses recorded and it was impossible to discern which diagnosis the opioid was prescribed for. As a result, we adjusted our multivariate analysis for the chief complaint because we thought this was the best indicator of why the patient presented to the ED.

Because there are no criterion standard definitions for "opioid naive" or "recurrent opioid use," we chose our definitions according to a previous article and because they have face validity.[8] Our a priori definition of recurrent use could have overestimated opioid use because patients may have had a subacute painful condition for 1 year that did not become chronic, or perhaps experienced a second unrelated acute painful condition 1 year after the index ED visit. Conversely, our a priori definition could have underestimated opioid use because it required a prescription filled in state within a 4-month period. It is conceivable that opioid prescriptions were filled before or after this period, filled out of state, or been obtained illicitly. Our limited data use agreement did not allow us to collect data for the period between the index visit until our predefined follow-up period, collect individual prescription-level data that would have allowed us to calculate milligram morphine equivalents, or collect additional data after the initial data collection. The lack of data for the interim period limited any analysis of the definition of recurrent use. Last, the term "recurrent opioid use" is not accurate when applied to patients who did not receive an opioid prescription or did not fill their prescription from the index ED visit. However, because there are potential implications for these groups, we have chosen to keep the term to be consistent in terminology and facilitate comparisons.

Finally, patients may have been misclassified if they used different identities in an attempt to avoid detection. Some subjects may have been inaccurately identified as naive or may not have been identified as having recurrent opioid use because opioid prescriptions from the Veterans Administration systems would not have been detected in our search.

DISCUSSION

Prescribing opioids from the ED is an accepted part of the treatment of acute pain, and the rate of ED opioid prescribing is increasing.[11] Unfortunately ED prescribing may also be a gateway to recurrent opioid use. In this study, 17% of patients who filled their first opioid prescription for a minor painful condition were still receiving opioids 1 year after the index ED visit. Eight percent to 10% of opioid-naive patients who did not use opioids after discharge (either did not receive a prescription or did not fill one) still filled an opioid prescription during the follow-up period. This shows that there is a concerning percentage of ED patients who will have another prescription in the follow-up window, presumably for a new issue. However, even with this high baseline rate of use in our population, it is striking that the rate of recurrent use was twice as high for opioid-naive patients who received and filled their ED opioid prescription. The reason for this increased use is unclear; however, this extended use is not consistent with the expected time course of healing for acute painful conditions.[12]

The relative percentage increase in recurrent opioid use we identified is similar to that among opioid-naive patients

undergoing minor surgery (44%), although the overall rate of use at 1 year was only 8% in the minor surgery population.[8] Clarke et al[10] found the risk of recurrent opioid use after major elective surgery to be even lower than that for both minor surgery patients and our ED patients. In a study of patients older than 65 years who elected to have cardiac, intrathoracic, intra-abdominal, or pelvic surgery, they found that only 3.1% of opioid-naive patients were still receiving opioids at greater than 90 days. This lower rate of recurrent use may be due to an older study population, the inclusion of only elective surgery patients, alternative pain management techniques, or differing definitions of recurrent use and follow-up periods.

The long-term effects of opioid initiation are important to ED providers because their decision to prescribe opioids for acute pain may affect their patients' future risk of opioid use.[13] ED providers may view their primary obligation to treating the acute issue that triggered the emergency visit but may not consider the patient's future health because these events are remote in both time and distance (eg, antibiotic stewardship, radiation exposure). Emergency physicians may err on the side of overtreating with opioids because pain and suffering are viewed as a threat to therapeutic success.[14] The result may be an opioid pain medication that is likely to be effective against the pain, but may not be necessary and may actually put the patient at long-term risk.

The 12% of our patients who did not fill their opioid prescription were at the lowest risk of recurrent use. This suggests the need for further evaluation of patients' decisions to initiate receiving these medications. This decision involves tradeoffs in risks and benefits and likely involves patients' personal values, beliefs, and knowledge. Better understanding of this decision may facilitate informed discussions about the initiation of these medications to help patients mitigate the risks of prolonged or unsafe use.

Clearly, recurrent opioid use as defined here is only a surrogate for the real outcomes of interest (opioid-related morbidity, mortality, abuse, misuse, and diversion). There is a clear need for a prospective, controlled study to determine whether the risk of recurrent use associated with ED opioid prescribing for minor painful diagnoses holds true. If so, current practices of ED prescribing of short-term opioids for self-limited painful conditions must be reconsidered. Further study of the subgroup of patients who go on to develop recurrent use could help identify risk factors that predispose to opioid dependence. Understanding recurrent risk and factors that contribute would improve the decisionmaking of both patients and physicians.

A strength of this study is the ability to connect clinical data with the objective information provided by the prescription drug monitoring program. This unique use of its data minimizes the limitations of missing prescriptions through self-reporting, chart abstraction, and homogeneous populations in insurance data sets.[15] The granularity of the prescription drug monitoring program allows us to closely and reliably link the clinical chart of patient populations to the outcome of interest. Approximately half of our patients received an opioid prescription on ED discharge, which demonstrates that our department does not hesitate to aggressively address these painful conditions and is consistent with previous reports of ED opioid prescribing rates.[11]

In conclusion, the initiation of opioid pain medications treatment for minor, acute pain was associated with an increased risk for opioid use 1 year later. The odds ratio for recurrent use is increased for patients who filled an opioid prescription compared with patients who either received a prescription but did not fill it or patients not prescribed opioids.

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DIAGNOSIS:

Aortoenteric fistula. Aortoenteric fistula occurs in 0.9% of all abdominal aortic aneurysm repairs.[1] The exact cause is unknown, but infection of the graft may contribute because 54% of patients with this diagnosis have positive blood culture results.[2] Broad-spectrum antibiotics are recommended as early therapy because of the infection risk. Prompt operative management is paramount because mortality for untreated patients approaches 100%.[2] CT angiography of the abdomen and pelvis without enteric contrast is the imaging modality of choice when evaluating a stable patient for aortoenteric fistula.

This patient went rapidly to the operating room and underwent small bowel resection with axillobifemoral bypass. The patient's blood cultures grew viridans streptococci. He was discharged from the hospital on postoperative day 9.

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APPENDIX E1.

1. *International Classification of Diseases, Ninth Revision* codes were identified with the search algorithm in EPIC by diagnosis name where:
   dx_name like '%dental pain%'
   or dx_name like '%tooth pain%'
   or dx_name like '%jaw pain%'
   or dx_name like '%flank pain%
   or dx_name like '%abdominal pain%'
   or dx_name like '%pelvic pain%'
   or dx_name like '%back pain%'
   or dx_name like '%neck pain%'
   or dx_name like '%knee pain%'
   or dx_name like '%headache%'
   or dx_name like '%fracture%'
   or dx_name like '%sprain%'
2. Recoding strategy to account for colinearity. Variable recoding for logistic regression. Tables show the count of how each recorded value was coded.

Race: coded value for logistic model.

Recorded Value	Black	Hispanic	Other	White
Asian	0	0	86	0
Black	670	0	0	0
Hispanic	0	648	0	0
Native	0	0	6	0
Other	0	0	90	0
White	0	0	0	962

Chief complaint: coded value for logistic model.

Recorded Value	Abdomen/Pelvis	Back	Chest	ENT/Dental	Extremity	Head	Injury	Neck	Other
Abdominal cramping	2	0	0	0	0	0	0	0	0
Abdominal injury	1	0	0	0	0	0	0	0	0
Abdominal pain	604	0	0	0	0	0	0	0	0
Abnormal laboratory result	0	0	0	0	0	0	0	0	1
Addiction problem	0	0	0	0	0	0	0	0	1
Alcohol intoxication	0	0	0	0	0	0	0	0	6
Alcohol problem	0	0	0	0	0	0	0	0	2
Alleged domestic violence	0	0	0	0	0	0	8	0	0
Alleged sexual assault	0	0	0	0	0	0	1	0	0
Allergic reaction	0	0	0	0	0	0	0	0	1
Altered mental status	0	0	0	0	0	0	0	0	5
Ankle injury	0	0	0	0	5	0	0	0	0
Ankle pain	0	0	0	0	108	0	0	0	0
Ankle pain left	0	0	0	0	2	0	0	0	0
Ankle problem	0	0	0	0	1	0	0	0	0
Anxiety	0	0	0	0	0	0	0	0	4
Arm injury	0	0	0	0	24	0	0	0	0
Arm pain	0	0	0	0	8	0	0	0	0
Assault victim	0	0	0	0	0	0	34	0	0
Back injury	0	2	0	0	0	0	0	0	0
Back pain	0	254	0	0	0	0	0	0	0
Bloated	1	0	0	0	0	0	0	0	0
Blood infection	0	0	0	0	0	0	0	0	1
Cerebrovascular accident	0	0	0	0	0	0	0	0	2
Chest injury	0	0	5	0	0	0	0	0	0
Chest pain	0	0	56	0	0	0	0	0	0
Chills	0	0	0	0	0	0	0	0	1
Clavicle injury	0	0	0	0	2	0	0	0	0
Constipation	2	0	0	0	0	0	0	0	0
Cough	0	0	0	0	0	0	0	0	5
Dehydration	0	0	0	0	0	0	0	0	1
Delirium tremens (DTs)	0	0	0	0	0	0	0	0	1
Dental injury	0	0	0	4	0	0	0	0	0
Dental pain	0	0	0	24	0	0	0	0	0
Dental problem	0	0	0	2	0	0	0	0	0
Depression	0	0	0	0	0	0	0	0	1
Diarrhea	3	0	0	0	0	0	0	0	0
Diverticulitis	1	0	0	0	0	0	0	0	0
Dizziness	0	0	0	0	0	0	0	0	20
Drug overdose	0	0	0	0	0	0	0	0	2
Dysuria	5	0	0	0	0	0	0	0	0
Ear fullness	0	0	0	1	0	0	0	0	0
Elbow injury	0	0	0	0	1	0	0	0	0
Elbow pain	0	0	0	0	2	0	0	0	0
Emesis	28	0	0	0	0	0	0	0	0
Emesis during pregnancy	2	0	0	0	0	0	0	0	0
Epistaxis	0	0	0	4	0	0	0	0	0
Extremity laceration	0	0	0	0	1	0	0	0	0
Extremity weakness	0	0	0	0	6	0	0	0	0
Eye drainage	0	0	0	1	0	0	0	0	0
Eye injury	0	0	0	2	0	0	0	0	0
Eye pain	0	0	0	2	0	0	0	0	0
Eye problem	0	0	0	2	0	0	0	0	0
Facial droop	0	0	0	1	0	0	0	0	0
Facial injury	0	0	0	14	0	0	0	0	0
Facial laceration	0	0	0	1	0	0	0	0	0
Facial pain	0	0	0	4	0	0	0	0	0
Facial swelling	0	0	0	3	0	0	0	0	0
Fall	0	0	0	0	0	0	81	0	0
Fatigue	0	0	0	0	0	0	0	0	5
Fever	0	0	0	0	0	0	0	0	9
Finger injury	0	0	0	0	3	0	0	0	0

Continued.

Recorded Value	Abdomen/Pelvis	Back	Chest	ENT/Dental	Extremity	Head	Injury	Neck	Other
Flank pain	0	65	0	0	0	0	0	0	0
Foot injury	0	0	0	0	12	0	0	0	0
Foot pain	0	0	0	0	6	0	0	0	0
Foot pain left	0	0	0	0	1	0	0	0	0
Foot pain right	0	0	0	0	2	0	0	0	0
Generalized body aches	0	0	0	0	0	0	0	0	1
GI bleeding	2	0	0	0	0	0	0	0	0
Groin pain	4	0	0	0	0	0	0	0	0
Groin swelling	1	0	0	0	0	0	0	0	0
Gunshot wound	0	0	0	0	0	0	1	0	0
Hand injury	0	0	0	0	27	0	0	0	0
Hand pain	0	0	0	0	39	0	0	0	0
Head injury	0	0	0	0	0	5	0	0	0
Head laceration	0	0	0	0	0	1	0	0	0
Headache	0	0	0	0	0	248	0	0	0
Hematemesis	2	0	0	0	0	0	0	0	0
Hematochezia	2	0	0	0	0	0	0	0	0
Hematuria	2	0	0	0	0	0	0	0	0
Hip injury	0	0	0	0	1	0	0	0	0
Hip pain	0	0	0	0	9	0	0	0	0
Hyperglycemia	0	0	0	0	0	0	0	0	2
Hyperkalemia	0	0	0	0	0	0	0	0	1
Hypertension	0	0	0	0	0	0	0	0	18
Influenza	0	0	0	0	0	0	0	0	1
Inguinal hernia	1	0	0	0	0	0	0	0	0
Jaw pain	0	0	0	12	0	0	0	0	0
Joint pain	0	0	0	0	1	0	0	0	0
Joint swelling	0	0	0	0	8	0	0	0	0
Knee injury	0	0	0	0	27	0	0	0	0
Knee pain	0	0	0	0	68	0	0	0	0
Knee pain left	0	0	0	0	1	0	0	0	0
Knee pain right	0	0	0	0	1	0	0	0	0
Leg injury	0	0	0	0	9	0	0	0	0
Leg pain	0	0	0	0	29	0	0	0	0
Leg pain right	0	0	0	0	1	0	0	0	0
Loss of consciousness	0	0	0	0	0	8	0	0	0
Loss of vision	0	0	0	1	0	0	0	0	0
Medication refill	0	0	0	0	0	0	0	0	5
Melena	2	0	0	0	0	0	0	0	0
Memory loss	0	0	0	0	0	0	0	0	1
Migraine	0	0	0	0	0	7	0	0	0
Morning sickness	1	0	0	0	0	0	0	0	0
Motor vehicle crash	0	0	0	0	0	0	142	0	0
Motorcycle crash	0	0	0	0	0	0	9	0	0
Mouth injury	0	0	0	1	0	0	0	0	0
Muscle pain	0	0	0	0	0	0	0	0	1
Nausea	8	0	0	0	0	0	0	0	0
Neck injury	0	0	0	0	0	0	0	21	0
Neck pain	0	0	0	0	0	0	0	23	0
Null	0	0	0	0	0	0	0	0	0
Numbness	0	0	0	0	0	0	0	0	11
Oral swelling	0	0	0	1	0	0	0	0	0
Otalgia	0	0	0	5	0	0	0	0	0
Ovarian cyst	2	0	0	0	0	0	0	0	0
Palpitations	0	0	0	0	0	0	0	0	1
Panic attack	0	0	0	0	0	0	0	0	1
Pelvic pain	1	0	0	0	0	0	0	0	0
Peripheral neuropathy	0	0	0	0	1	0	0	0	0
Pharyngitis	0	0	0	4	0	0	0	0	0
Pleurisy	0	0	3	0	0	0	0	0	0
Psychiatric evaluation	0	0	0	0	0	0	0	0	1
Rash	0	0	0	0	0	0	0	0	5

Continued.

Recorded Value	Abdomen/Pelvis	Back	Chest	ENT/Dental	Extremity	Head	Injury	Neck	Other
Rectal bleeding	2	0	0	0	0	0	0	0	0
Rectal problems	4	0	0	0	0	0	0	0	0
Rib injury	0	0	11	0	0	0	0	0	0
Seizures	0	0	0	0	0	0	0	0	5
Shortness of breath	0	0	0	0	0	0	0	0	19
Shoulder injury	0	0	0	0	13	0	0	0	0
Shoulder pain	0	0	0	0	18	0	0	0	0
Skin problem	0	0	0	0	0	0	0	0	1
Skin ulcer	0	0	0	0	0	0	0	0	1
Suicidal	0	0	0	0	0	0	0	0	1
Tachycardia	0	0	0	0	0	0	0	0	1
Tailbone pain	0	3	0	0	0	0	0	0	0
Testicle pain	1	0	0	0	0	0	0	0	0
Threatened miscarriage	1	0	0	0	0	0	0	0	0
Toe injury	0	0	0	0	6	0	0	0	0
Toe pain	0	0	0	0	30	0	0	0	0
Torticollis	0	0	0	0	0	0	0	7	0
Trauma	0	0	0	0	0	0	10	0	0
Uch amb g tube problem	1	0	0	0	0	0	0	0	0
URI	0	0	0	0	0	0	0	0	6
Urinary frequency	1	0	0	0	0	0	0	0	0
Urinary retention	1	0	0	0	0	0	0	0	0
Urinary tract infection	2	0	0	0	0	0	0	0	0
Vaginal bleeding	13	0	0	0	0	0	0	0	0
Vaginal discharge	1	0	0	0	0	0	0	0	0
Vaginal itching	1	0	0	0	0	0	0	0	0
Wound infection	0	0	0	0	0	0	0	0	1
Wrist pain	0	0	0	0	41	0	0	0	0