

# Survey of pain etiology, management practices and patient satisfaction in two urban emergency departments

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## ABSTRACT

**Objective:** The underuse of analgesics, or “oligoanalgesia,” is common in emergency departments (EDs). To improve care we must understand our patients’ pain experiences as well as our clinical practice patterns. To this end, we examined pain etiology, pain management practices and patient satisfaction in 2 urban EDs.

**Methods:** We conducted a cross-sectional study using structured interviews and chart reviews for patients with pain who presented to either of 2 university-affiliated EDs. We assessed pain etiologies, patient pain experiences, pain management practices, and patient satisfaction with pain management.

**Results:** The 525 study subjects reported high pain intensity levels on presentation, with a median rating of 8 on a 10-point numerical rating scale (NRS). At discharge, pain severity had decreased to a median rating of 4; however, 48% of patients were discharged from the ED in moderate to severe pain (NRS 5–10). Subjects reported spending 57% of their ED stay in moderate to severe pain. Analgesics were administered to only 50% of patients. The mean time to analgesic administration was almost 2 hours. Despite high levels of reported pain at discharge and low rates of analgesic administration, subjects reported high satisfaction with pain management.

**Conclusions:** In the 2 EDs studied, we found high levels of pain severity for our patients, as well as low levels of analgesic use. When used, analgesic administration was often delayed. Despite these findings, patient satisfaction remained high. Despite recent efforts to improve pain management practice; oligoanalgesia remains a problem for our specialty.

**Key words:** pain, pain measurement, patient satisfaction, analgesics, quality assurance, oligoanalgesia

## RÉSUMÉ

**Objectif :** La sous-utilisation des analgésiques ou «oligoalgésie» est courante au département d’urgence (DU). Pour améliorer les soins, nous devons comprendre le niveau de douleur ressentie par nos patients ainsi que nos habitudes de pratique clinique. À cette fin, nous avons examiné l’étiologie de la douleur, les pratiques de prise en charge de la douleur et le degré de satisfaction des patients dans deux DU en milieu urbain.

**Méthodes :** Nous avons mené une enquête transversale à l’aide d’entrevues structurées et de revue de dossiers pour des patients en douleur reçus à l’un ou l’autre de deux DU affiliés à une université. Nous avons évalué l’étiologie de la douleur, le niveau de douleur ressentie par les patients, les pratiques de prise en charge de la douleur et la satisfaction des patients face à cette prise en charge.

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**Résultats :** Les 525 sujets à l'étude signalèrent des niveaux élevés de douleur au moment de leur arrivée à l'urgence, avec un score médian de 8 sur une échelle d'évaluation numérique en 10 points (EEN). Au moment du congé, l'intensité de la douleur était redescendue à un score médian de 4; cependant, 48 % des patients reçurent leur congé de l'urgence avec une douleur de modérée à sévère (EEN 5–10). Les sujets déclarèrent avoir ressenti une douleur de modérée à sévère pendant 57 % de leur séjour au DU. Des analgésiques furent administrés à seulement 50 % des patients. Le délai moyen d'administration d'analgésiques était de presque deux heures. Malgré des niveaux élevés de douleur signalés lors du congé et du faible taux d'administration d'analgésiques, le taux de satisfaction des sujets face à la prise en charge de leur douleur était élevé.

**Conclusions :** Dans les deux DU à l'étude, nous avons constaté des niveaux de douleur élevés pour nos patients, ainsi que de faibles taux de recours aux analgésiques. Lorsqu'on y avait recours, l'analgésie était souvent retardée. Malgré ces constatations, le niveau de satisfaction des patients demeura élevé. En dépit des efforts récents pour améliorer les pratiques de prise en charge de la douleur, l'oligoanalgésie demeure un problème pour notre spécialité.

## Introduction

Adequate analgesia for patients is an important goal for treatment of patients with painful conditions; however, the underuse of analgesics, termed “oligoanalgesia,” occurs in a large proportion of emergency department (ED) patients.<sup>1–4</sup> Oligoanalgesia continues to be a problem despite widespread efforts to improve pain management practices.<sup>5</sup> In response to the problem of oligoanalgesia, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has revised their standards for pain assessment and management.<sup>6</sup>

To improve pain management practices it is important to understand the current state of our patients' pain experiences as well as our clinical practice patterns. To this end, we examined pain etiology, pain management practices, patient pain experiences, and patient satisfaction with pain management in 2 urban EDs.

## Methods

We conducted a cross-sectional study using structured interviews and medical chart reviews in 2 university-affiliated EDs — Emory University Hospital, Atlanta, Ga., and the University of Illinois at Chicago (UIC), Chicago, Ill. Both departments serve urban populations and have a combined annual census of 60 000 visits. All patients were seen by emergency physicians, including residents supervised by emergency medicine faculty.

All adult ED patients who presented during times when study assistants were available and who indicated to them that their visit was prompted by pain were eligible for inclusion. We excluded patients who refused interview, those with altered mental status or critical illness precluding interview, and non-English speaking patients. Study subjects were enrolled during the spring and summer of 2000. Pa-

tients were approached at the time of ED discharge or admission to hospital — usually during busy periods from late morning to late evening hours.

After obtaining written, informed consent, trained interviewers performed structured interviews using a patient pain questionnaire. We also performed medical chart reviews recording specifics of pain complaints and management, using a written abstraction instrument.

We assessed pain etiologies, patient pain experiences and pain management practices, and we measured patient satisfaction with pain management. Our survey assessed whether ED staff had informed patients about the importance of pain. In addition, we recorded self-reports of pain intensity using a 10-point numerical rating scale (NRS), pain duration, and a 6-point ordinal descriptive scale for patient satisfaction with pain management (Very dissatisfied to Very satisfied). Through chart reviews we determined whether and when patients received analgesics and what the final diagnosis was.

Institutional review boards at both sites approved the study protocol. Statistical analyses were performed using Stata statistical software (Stata Corp., College Station, Tx.). In addition to descriptive analyses, nonparametric tests for trend were conducted to determine the relationship of presenting pain intensity and analgesic use.<sup>7</sup>

## Results

A total of 1339 patients were evaluated for study inclusion. Of these, 606 met eligibility criteria and agreed to participate. In 26 cases, medical records were missing and, in 6 cases, surveys were missing or incomplete. We subsequently excluded 49 patients who received anti-anginal agents (not analgesics) for cardiac chest pain, leaving 525 subjects with analyzable data (87% of eligible patients). Table 1 shows

that age and gender were similar at the 2 sites; however, the UIC sample included mostly African-Americans and Hispanics and the Emory sample was predominantly white. Overall, 83% of patients had some form of insurance (36% Medicaid), and 17% were uninsured. UIC subjects were more likely to have Medicaid funding, while Emory subjects were more likely to have private insurance or Medicare.

Table 2 shows that abdominal, chest and musculoskeletal pain were the most common diagnoses and that over two-thirds of patients had non-traumatic pain. Pain intensity at the time of ED presentation was high, with 49% of patients reporting severe pain (NRS 8–10) and one-quarter reporting the maximum level of 10. Another 34% of patients presented with moderate pain (NRS 5–7) and 14% had mild pain (NRS 1–4). The median value for “worst pain experienced during the ED visit” was 8. Figure 1 shows that median pain rating fell from 8 to 4 during the ED stay ( $p < 0.001$ ; Wilcoxon matched-pairs signed-ranks test), but at the time of ED discharge or hospital admission, 16% of patients remained in severe pain, 32% in moderate pain, and 38% in mild pain. Only 14% were discharged pain free. Patients estimated that they spent 24% of their ED time in severe pain, 33% in moderate pain, 31% in mild pain and 12% in no pain. (Fig. 2.) Thus, subjects reported spending an average of 57% of their ED time in moderate to severe pain.

Patients reported that, in 69% of cases, ED staff discussed the importance of pain treatment. Despite this, only 50% of patients received an analgesic, including 28% of those with

mild pain, 40% with moderate pain and 63% with severe pain ( $p < 0.01$  by Cuzick nonparametric test for trend).<sup>7</sup> The mean time interval from triage to analgesic administration was 116 minutes (95% CI, 102–130), and only 29% of patients received analgesics within 1 hour of arrival. When we restricted our analysis to patients with moderate and severe

**Table 2. Type of pain or final diagnosis for 525 study patients who presented with high pain intensity levels**

Type of pain or final diagnosis	Frequency (%)
Abdominal pain	58 (11.4)
Sprain or strain	57 (11.2)
Noncardiac chest pain	33 (6.5)
Contusion	32 (6.3)
Laceration	31 (6.1)
Fracture	30 (5.9)
Back pain	29 (5.7)
Headache	26 (5.1)
Upper respiratory infection	18 (3.6)
Pelvic pain	14 (2.8)
Arthritis	12 (2.4)
Congestive heart failure	12 (2.4)
Gastroenteritis	12 (2.4)
Cellulitis	11 (2.2)
Other*	132 (26.1)
Missing	18 (3.6)
Total trauma or mechanical etiologies	191 (37.7)

\* Less than 2% in each category

**Table 1. Characteristics of 525 study subjects reporting high pain intensity levels on presentation to one of two university-affiliated hospital emergency departments**

Patient characteristics	Hospital; % of patients*		
	Emory University <i>n</i> = 260	University of Illinois at Chicago <i>n</i> = 265	Total <i>n</i> = 525
Median age, yr	41	39	39
Female	62	67	64
Ethnicity			
African-American	34	63	49
White	62	18	39
Hispanic	1	19	11
Asian-American	2	1	2
Insurance status			
Medicare	17	10	14
Medicaid	7	36	20
Self-pay	22	17	19
Workers Compensation	3	7	5
Private	27	14	21
HMO	24	17	21

\* Unless otherwise stated.  
HMO = health maintenance organization

pain (NRS 5–10) we found similar results: only 54% received analgesics, and only 28% within the first hour. Figure 3 illustrates that analgesics were typically administered near the mid-point of an average 4-hour stay. Of patients who did not receive analgesics, 11% requested but did not receive them, and 88% did not request. Figure 4 shows that, despite low rates of analgesic administration and high levels of pain at discharge, subjects in both EDs reported relatively high satisfaction with pain management (median score 5 out of 6).

## Discussion

Pain is the most common symptom prompting patients to seek emergency care.<sup>5,8–11</sup> Over the past decade emergency physicians have documented a high prevalence of oligoanalgesia, and improving the management of acute pain is a priority for our specialty.<sup>1–5</sup> In an attempt to focus attention on this problem the JCAHO recently promulgated new standards for pain assessment and management.<sup>6</sup> Our objective was to better understand our patients' pain experiences and their perceptions of pain management. Our results provide a baseline with which to com-

pare future pain management assessments after implementation of the new JCAHO standards.

Our patients reported high levels of pain intensity at arrival and discharge, and our findings are consistent with previous ED studies. Two Canadian studies have reported pain intensity on ED arrival and discharge. In 1994, using similar pain intensity categorization to our study, Ducharme and Barber reported moderate to severe pain in 69% of patients at ED presentation vs. 58% at discharge.<sup>5</sup> In 2000, Guru and Dubinsky reported that 75% of patients arrived at the ED in moderate to severe pain and that 61% were discharged with pain of this intensity.<sup>12</sup> And in the US in 1998, Stahmer and colleagues reported mean pain intensity levels of 7.0 and 4.5 (on an 11-point numerical scale)

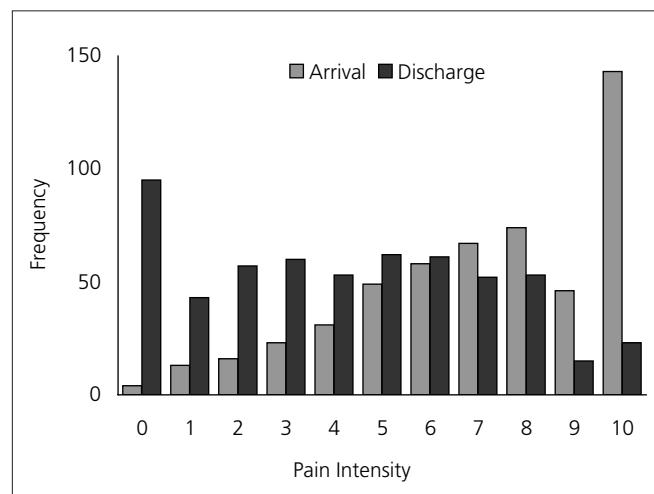


Fig. 1. Pain intensity at arrival and at discharge

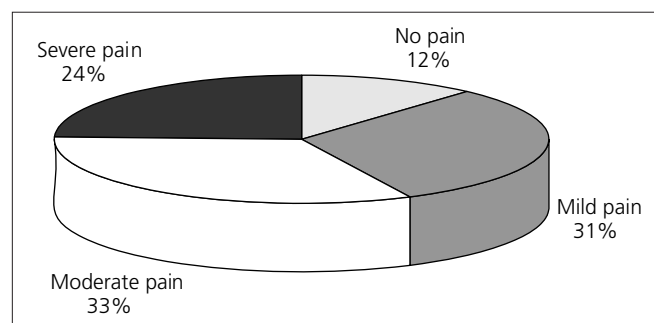


Fig. 2. Average time spent in pain, by severity

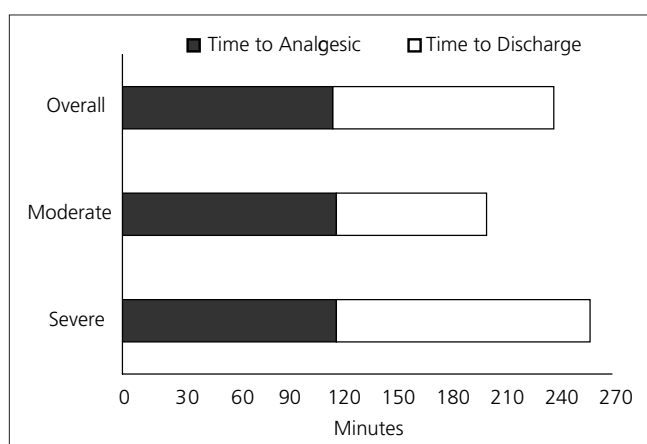


Fig. 3. Times to analgesic and discharge

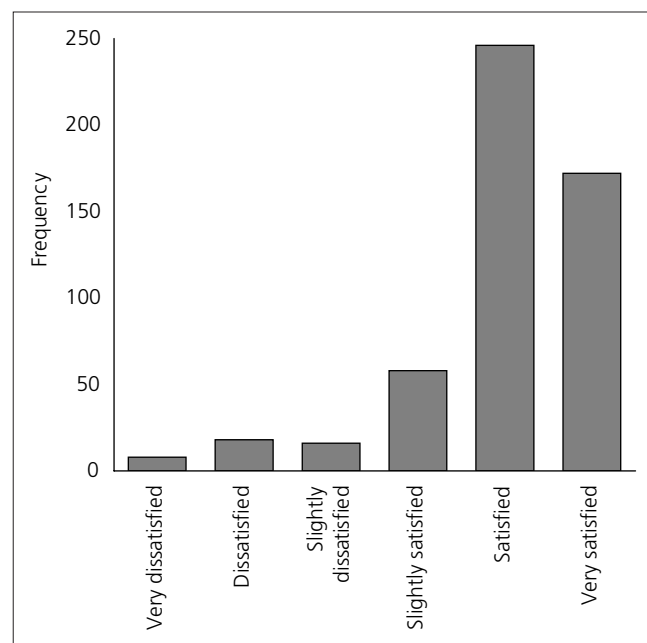


Fig. 4. Patient satisfaction with pain management

at ED arrival and discharge, respectively. In that study, pain relief was a significant predictor of patient satisfaction with pain management.<sup>13</sup>

Based on these studies as well as our findings, it seems prudent to recommend that pain intensity be assessed routinely both at arrival and at the time of ED discharge, to better monitor this important patient-focused outcome. Given the fact that only half of our patients in pain received any analgesic, and that these were administered 2 hours after ED presentation, it is also important to recommend early administration of analgesics to all patients reporting pain who do not have an analgesic contraindication. Protocols that offer analgesics at triage are a simple but underutilized intervention that should be evaluated in future studies.

One element of the new JCAHO pain standards is communicating to patients the importance of pain assessment and management. In this, our departments did well — complying in more than two-thirds of cases. Posting signs in our departments that highlight our commitment to address patients' pain might increase this proportion.

It is interesting that, although patients experienced high levels of pain and were advised of the importance of pain management, 88% of those who went untreated did not request analgesics. Additional education might increase the proportion of patients who ask for analgesics, but these data suggest that many patients do not expect pain control. In addition, patients reported relatively high levels of satisfaction with pain management. Although this finding is somewhat reassuring, it may reflect the insensitivity of our assessment instruments or the social desirability bias inherent in this tool.<sup>14</sup>

### Limitations

Unfortunately, we were unable to include all eligible subjects. Although we missed relatively few, there may have been a selection bias that skewed our results. Severe illness or injury precluded enrolling many patients who may have had high levels of pain, thus our findings may underestimate patient pain experience. In addition, although the ED staff were not informed of the study purpose and our research assistants attempted to interview subjects discreetly after their contact with physicians, it is likely that some became aware of our project and altered their pain management practices. Also, our study methodology allowed us to determine ED analgesic use, but we could not accurately assess nonpharmacologic interventions or analgesics prescriptions filled after ED discharge, thus we can make no comment as to their use or impact. Our satisfaction instruments produced distributions that were highly skewed toward positive responses, and this may have precluded precise determinations of pa-

tient satisfaction. It is possible that more sensitive instruments might have provided different results. Finally, our study was conducted at 2 urban, university EDs, and our results should be generalized to other settings with caution.

### Conclusions

This study documents high levels of pain intensity and low levels of analgesic use in our EDs. We suspect that these findings are true for EDs in other settings. With an increased national focus on assessing patient pain experiences and monitoring pain management practices, we suspect that other such reports will be forthcoming. Whether currently proposed JCAHO interventions will improve on this state of affairs remains to be seen.

**Competing interests:** Supported by a grant from Pharmacia, Inc. Connie Chen is an employee and stockholder of Pharmacia.

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