How, why, and for whom do emergency medicine providers use Prescription Drug Monitoring Programs?

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Abstract

Objective—The prescription opioid epidemic is currently responsible for the greatest number of unintentional deaths in the United States. One potential strategy for decreasing this epidemic is implementation of state-based Prescription Drug Monitoring Programs (PDMPs), which are designed for providers to identify patients who "doctor shop" for prescriptions. Emergency medicine physicians are some of the most frequent PDMP users and opioid prescribers, but little is known about how they actually use PDMPs, for which patients, and for what reasons.

Methods—We conducted and transcribed semi-structured qualitative interviews with 61 physicians at a national academic conference in October 2012. Deidentified transcripts were entered into QSR NVivo 10.0, coded, and analyzed for themes using modified grounded theory.

Results—There is variation in pattern and frequency of PDMP access by emergency physicians. Providers rely on both structural characteristics of the PDMP, such as usability, and also their own clinical gestalt impression when deciding to use PDMPs for a given patient encounter. Providers use the information in PDMPs to alter clinical decisions and guide opioid prescribing patterns. Physicians describe alternative uses for the databases, such as improving their ability to facilitate discussions on addiction and provide patient education.

Conclusion—PDMPs are used for multiple purposes, including identifying opioid misuse and enhancing provider-patient communication. Given variation in practice, standards may help direct

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indication and manner of physician use. Steps to minimize administrative barriers to PDMP access are warranted. Finally, alternative PDMP uses should be further studied to determine their appropriateness and potentially expand their role in clinical practice.

Keywords

prescription opioids; prescription monitoring programs; emergency care; healthcare providers

Introduction

Prescription drug abuse is one of the gravest epidemics facing the United States. Since 2009, drug overdoses, most of which are opioid-related, have become the leading cause of injury-related death in the US, surpassing motor vehicle accidents.[1-3] Over the same period, opioid prescriptions increased by 48% to 174 million prescriptions per year, and in 2011, 2.3 million Americans reported using prescription drugs for non-medical reasons, with 80% specifically misusing prescription opioids. [1,2,4]

In the early 2000s, the National Drug Control Strategy proposed a multi-pronged approach to combat this growing epidemic with an emphasis on initiatives to improve patient and physician education, drug monitoring, proper opioid disposal, and law enforcement. [5] One of the critical pieces of this strategy was the implementation of (and increased utilization of pre-existing) state-based Prescription Drug Monitoring Programs (PDMPs). The primary PDMP applications are to detect and prevent the diversion of prescription drugs, reduce "doctor shopping", and reduce prescription drug abuse. [3,5] Specifically, PDMPs allow registered users the opportunity to access an online system to examine, track, and record an individual patient's opioid prescription history. [3] While federal legislature in support of PDMPs began as early as 1993, rapid implementation of PDMPs and transition to web-based platforms has been much more recent. By October 2013, 48 states had implemented PDMPs, albeit with significant variation in state-based mandates for accessing the database. [6]

Previous work has identified the initial successes and pitfalls of PDMP implementation at the state-level. States with early PDMP implementation initially struggled with physician awareness and implementation of their PDMP, with difficulty of access and lack of time cited as significant barriers to use. [7, 8] Studies from other states have shown that PDMP registration and use among physicians has significantly changed prescribing patterns and reduced the prescriptions of commonly abused controlled substances. [9-12] Some states, including New York, have legislated punitive consequences, such as loss of license and potential criminal charges, for physicians who do not register for PDMPs or fail to use it appropriately.[9, 13]

Recent work has aimed to identify the types of physicians who access PDMPs and their motivations for doing so. [14, 15] Emergency physicians (EPs) are among the most likely providers to register and use PDMPs. [14] As frequent users of a relatively new technology, EPs can provide a window into some of the actual practices, barriers, and facilitators to the use of PDMPs. The manner in which they actually adopt PDMPs into their clinical practice will create meaningful insight for a broader clinical audience.[16] This study aims to use

individual physician interviews to identify PDMP practice patterns and identify the major barriers to their use and implementation in the emergency department setting. The goal of this study is to illuminate underexplored aspects related to the adoption and implementation of PDMPs in order to guide future studies and policies focused on aiding physicians who need to treat pain without facilitating opioid addiction.

Method

Study Design

We conducted semi-structured interviews with a convenience sample of 61 emergency medicine physicians at a large national meeting, the American College of Emergency Physicians Scientific Assembly (October 2012). We used rigorous qualitative methods to uncover physician patterns of practice around PDMP usage. We intended for the resultant themes to generate hypotheses for further expansion of PDMPs.[17] The institutional review board at the University of Pennsylvania approved the study protocol. We used the Consolidated Criteria for Reporting Qualitative Research to guide data collection, analysis, and reporting. [18,19]

Selection of Participants and Setting

We recruited emergency physicians with the intent of garnering a diverse array of participants using flyers and direct solicitation. For compensation, participants were entered into a raffle for a tablet computer. As we were specifically interested in PDMPs (which are largely designed physicians use), we excluded non-physicians from participation. Participants were recruited until thematic saturation was reached, as determined by agreement between two study investigators (A.S.K., Z.F.M.). Thematic saturation was defined as the point when additional interviews stopped providing novel experiences and opinions.

Data Collection and Processing

A standard guide was used to conduct the interviews (see appendix). Two investigators (Z.F.M., A.S.K.) with experience in emergency medicine and qualitative interviewing piloted the interview guide and conducted all interviews. Interviews were audiotaped, professionally transcribed, and entered into NVivo (version 10.0; QSR, Doncaster, Australia), a software tool for data management and analysis.

Primary Data Analysis

We used a modified grounded theory approach to the analysis. [20] This approach included the use of an *a priori* set of codes to ensure that we identified specific constructs that addressed our research question, as well as a set of codes that emerged from the data de novo. Four investigators (A.S.K., B.P., S.M.G., Z.F.M.) developed the set of grounded theory codes from a line-by-line reading of the text. The entire team of investigators reviewed the code list. Nine thematic nodes specifically pertained to PDMPs: access, awareness, frequency of use, pattern of use, obstacles, negative opinion, positive opinion, use in confronting patients, and patient reactions. Each code was defined and then applied to all transcripts by two study investigators (A.S.K, S.M.G). In terrater reliability was assessed

periodically with the function in NVivo designed for this purpose, with interrater agreement surpassing 90%. Discrepancies in coding were discussed and resolved by consensus. Two investigators (R.J.S., Z.F.M.) summarized codes and examined relationships among codes to develop a theory about the data.

Funding

Prior Work

The content of these interviews was previously analyzed by Kilaru et al to inform a manuscript on emergency medicine physician perspectives related to opioid guidelines. [21] We have adapted portions of our methods section from their study.

Results

Characteristics of Study Subjects

Table 1 describes the characteristics of our study subjects. The participants varied demographically across age, sex, years of practice, and geographic location.

Interview Domains and Themes

We organized the interview content about PDMPs into three broad domains: (1) barriers and facilitators to PDMP access; (2) frequency and triggers for PDMP use; and (3) alternative PDMP uses. Within each domain, we developed key themes, as presented below. Table 2 summarizes the key themes, as well as representative quotations from interview participants. This table also presents testable hypotheses and future research questions that can be derived from these themes.

Barriers and Facilitators to PDMP Use: Awareness, Obstacles, & Access

Awareness of PDMPs ranged broadly among providers, with some lacking previous knowledge of PDMPs and others having an elaborate understanding of their state's PDMP. Among those who were aware of their state's PDMP, many physicians noted that ease of PDMP access determines use. Providers cited many logistical and administrative obstacles to using their PDMP. Registering for and gaining initial permission to access the state PDMP often requires the physician to complete administrative tasks. Physicians noted that this process could be cumbersome and that it limited physician engagement with the database. Once an individual is registered, logging into the system is noted as complicated and time-consuming. Furthermore, lack of use of the PDMP can lead to user expulsion from the system, thereby requiring re-registration. As one physician notes, "You can't just get access to it, you have to get a notarized form and go through a lot of different steps to

actually even have access to that site. And then if you don't use it for a certain number of months you are kicked off and have to go through the whole process again."

From a programmatic standpoint, physicians noted that another obstacle to use is the infrequent or delayed updating of the PDMP. One physician noted that a lack of timeliness made the tool less useful for making real-time decisions around pain management: "I mentioned, in [STATE], they have one but it's totally useless. It's impossible to access and it doesn't keep any sort of current data on patients so it's not really available to us practically speaking."

Physicians also cite work-related time pressures as obstacles to using the PDMP. Providers are already challenged by time constraints, thus there is minimal incentive to pursue another tool in their decision making process. Not only does accessing the PDMP take time, but some noted that it detracts from patient flow, potentially worsening care that should be directed towards other patients. One provider stated, "it means a time investment and it's a penalty to use it, unfortunately. It's a penalty in patient flow."

Multiple providers noted that another barrier in some academic hospitals is that residents are unable to register for and access the system; this places a significant burden on the attending physician, who in academic settings is traditionally responsible for trainee oversight and education in addition to patient management. As such, many providers note that PDMP access should be expanded to include resident physicians-in-training and mid-level providers. As one physicians said, "I would prefer that the state allow residents to access the database […] the state will not allow a resident to access the database, except under my license, and then that becomes difficult, because then we'd have 39 residents on 36 faculties' licenses."

Conversely, ease of access within a state's PDMP is noted to facilitate use. In states with well functioning PDMPs, provider sentiment is often quite positive after they have overcome the registration hurdles to obtain access to the system. Various phrases used to describe these PDMPs included "it's a phenomenal system", and "it's amazingly helpful". Providers also comment positively on the statewide scope of access provided by PDMPs. These systems allow providers access to summative information that was previously unattainable: "we're allowed to look back into all patients' prescription history and so it makes it easier knowing that they haven't had opiates in the past and they're not seeking opiates to abuse them. Oh, just certainly one advantage of having a statewide practice".

How Physicians Use PDMPs: Frequency & Triggers

While physicians vary in how frequently they access the PDMP, their reasoning for choosing to do so for a given patient are often similar. Physicians frequently describe a "gestalt" suspicion that they rely on to gauge whether or not a patient is malingering. In these cases, the patient's story is often described as "off". As one physician notes, "I don't use it routinely but if I have a suspicion based on talking to the patient that they might be there – have secondary gain for narcotic dependence purposes, I will look them up."

Emergency providers use specific triggers from the history, physical exam, and clinical experience to inform the decision to access the PDMP. As one physicians comments, "I guess there are certain trigger signs that make us look things up - if people are requesting specific narcotics by name, if people have multiple allergies to NSAIDs or to everything that we normally use for pain that's not opioids, or in general if people are asking us for pain medicine we usually send them through the screening program." Table 3 lists a comprehensive list of the triggers mentioned for choosing to access the PDMP.

Similarly, some providers describe explicit reasons for choosing *not* to access the PDMP, such as when the physical injury is clear and opioids are the standard of care (i.e. fracture). One provider stated that it shouldn't be the responsibility of the emergency medicine physician to be in charge of monitoring opioids when patients are coming in for acute, urgent complaints: "I think that to me the patients that come in where you're acutely diagnosing something new, I don't think there's a real role for using prescription drug monitoring programs."

Additionally, among prescribers who had greater frequency of PDMP use, some commented on the increasing awareness of the program among patients. Providers cite patient recognition of the program as a reason for decreased utilization of the ED as a resource for pain management.

> "We have, in the last several months, seen a decrease because– the monitoring database has been finally implemented and […] the hospitals have come together and really setting hospital policies of not prescribing ongoing opiates in the emergency department for chronic pain patients. And so, patients are finally kind of getting the message this is not going to be a place to come to get one of 20 prescriptions for the week."

Alternative PDMP Uses

Physicians are using PDMPs in a number of ways beyond the designed purpose of the PDMPs. In addition to gathering information about opioid prescriptions and using that longitudinal information to guide decision-making around pain management, physicians are describing additional benefits in the realms of trust, communication, and patient education.

Some providers comment that PDMPs emphasize the opportunity that the PDMP creates for providing teaching, instruction, and anticipatory guidance. Instead of making decisions regarding the withholding or disbursement of pain medication using just their clinical instinct, they can rely on objective evidence to make individualized decision for patients:

> "I think a lot of people probably underestimate the utility of [PDMPs] and what other things, objective information can be gained from that, what kind of conversations could come from that. So, I think I'm just more fascinated with it and have new ways to use the information to actually help the patient."

One physician notes that as many times as the PDMP confirms her suspicion regarding drug-seeking behavior, she frequently finds herself mistaken and humbled:

> "I really enjoy it. I think it's a very beneficial tool. For the equal number of people
> that I've, I guess, busted, you know, they say oh – I got my scripts or I've never had
> it and they just got a large number of prescriptions filled by different providers
> recently, I've probably found the same number of people where I have reservations
> or things seemed kind of sketchy and they didn't have anything in our state"

When emergency medicine providers discuss the results of the PDMP data with their patients, the emotional response of the patient varies, at least from the perspective of the physician. These reactions seem to depend on the manner in which they are approached by the provider. Interactions described as confrontational by the provider are often, in turn, associated with negative patient reactions. As one physician commented, "some patients, if they were lying in the first place, and they get caught in a lie, they get pretty upset and they may leave." In contrast, when the provider describes using the PDMP data as a tool for patient education on addiction and pain management, the patient reaction is much more "thankful", and "eye-opening." As one physician recounts, "for the most part they appreciate that you take the time to discuss those issues and show them what your thought process is."

Physicians state they are not using PDMPs in a punitive fashion. When data arise indicating potential opioid misuse, some physicians take that as an opportunity to overtly address the issue with their patients and open a conversation about addiction and pain management. Providers state that they will print out the PDMP data and bring it with them to use as a concrete tool to share with patients. For providers, when they take the time to engage in these discussions, patients seem to improve their understanding of the risks of opioid misuse, and they are more likely to be given the resources to address their pain and potential addiction.

> "I often bring it to the patient to try and get to the bottom of what's going on, why
> they're in the emergency department that day for their chronic condition, why we
> can't get them adequate follow-up, what's going on with that follow-up."

Limitations

The results from this study were gathered from interviews conducted at a national conference for emergency medicine physicians. The findings cannot be generalized to the entire population of emergency physicians. A greater number of interview participants were male, practiced in academic settings. However, these limitations fall underneath the scope of qualitative research.

Since the time that these interviews were conducted in October 2012, some states have advanced their policies regarding PDMPs.[6] While it is possible that some individual perspectives on PDMPs have changed, many of the topics and concerns presented in this paper have yet to be addressed within a broader regulatory and clinical context. With such a rapid adoption of PDMP technology, these perspectives are, in fact, notably timely in directing upcoming policy and research.

Discussion

In this study we conducted in-person interviews with a diverse group of emergency medicine physicians around their patterns of use of state-wide PDMPs. There are three overarching findings that arose from our analysis: (1) a physician's decision to use the PDMP in their day-to-day practice appears to be driven by ease-of-access, not by policy or departmental guidelines; (2) there is significant variation in *for whom* the PDMP is accessed, suggesting the utility for identification and recommendation of best practices; and (3) physician users are describing a number of alternative uses to the PDMP that are novel and extend beyond the official, stated purpose of the databases.

A previous study by Hildebran et al utilized written, on-line focus groups with providers from multiple disciplines to conduct qualitative analysis around PDMP perspectives [Hildebran]. [22] Our methodology differs in that this is the first study of our knowledge to use individual interviews with physicians to conduct in-depth qualitative research around this topic. Our study also focuses specifically on the emergency providers, who, after primary care providers, comprise one of the largest groups of opioid prescribers and are among the most likely to interact with PDMPs. [14]

In line with Hildebran's findings, our interviews revealed that there are many common obstacles to regular PDMP usage, many of which are logistical in nature. [22] As might be expected, PDMPs with outdated data or delayed updating have less utility. When these obstacles are removed, physicians state they are more likely to use PDMPs and believe in their benefits. Physicians whose states have difficult PDMP access explicitly describe that they would use the system more regularly if these administrative barriers were quashed. Time is also a significant constraint, with many emergency physicians noting difficulty incorporating the PDMP into a regular work-flow. In order to lift some of the monitoring duties off the shoulders of attending physicians, individuals suggested the idea of expanding PDMP access to mid-level providers, resident physicians, and administrative staff. However, even with its various administrative criticisms, many physicians acknowledge that is clinically useful and often illuminating to see a cumulative snapshot of a patient's longitudinal and geographic experience with prescriptions.

While some of our themes were consistent with Hildreban's previous work, many novel themes emerged from the interviews, notably around patterns of physician use, communication between physicians and patients using PDMP data, and long-term concerns for the structure of PDMPs. Among providers, the reasons for making the decision to check the PDMP for any given patient varied widely. None of the physicians in the sample described a universal approach where they use the database for all patients. Nor were they aware of a standard of care, or best practices, for when to access the PDMP. While many of the stated triggers for accessing the PDMP were clinically valid, many providers rely exclusively on "clinical instinct" to make the decision, indicating that best practice guidelines are needed for determining which patients should be checked in the PDMP. These practice patterns may be particularly concerning given that previous research has shown that the positive predictive value of emergency provider impression of drug-seeking behavior was a mere 43%. [23]

Physicians are using PDMP data for a variety of different reasons beyond researching a patient's prescription opioid history. The interviews yielded some intriguing potential for the PDMP to serve as a tool to enhance communication between emergency providers and patient. The provider narratives suggest that the information presented in the PDMP enabled opportunities for discussion and education around the topics of ideal pain management, addiction and dependence. It has yet to be determined if these alternative PDMP uses are ethical or appropriate. Further work is needed to determine how the PDMP should be used in approaching patients. In essence, there is a deficit of education on how to use PDMPs, for whom to use PDMPs, and how to proceed with data available within PDMPs.

In sum, physicians in this sample see the PDMP as a tool-in-progress. The use of this tool within the medical field is likely to increase. With that inevitable increase, questions arise regarding meaningful use criteria, ideal practice, and integration within the medical system. As one physicians said, "I have faith in it as a tool. I think it has a long ways to go before we know exactly the best way to use it and the best way to incorporate it into our decision making process."

Conclusion

PDMPs are used for multiple purposes, including identifying opioid misuse and enhancing communication between patients and providers. However, standards and guidelines may help improve the indication and manner of physician use. Physicians describe ongoing logistical and administrative barrier to PDMP access, which will need to be overcome to optimize use. Finally, the alternative uses and benefits of the PDMP tool should be further studied to potentially expand the role of PDMP in clinical practice.

Acknowledgments

Appendix: Interview Guide for semi-structured interviews

Participant number _____

Verify that the patient has been consented and signed the consent form.

After recorder starts, announce the participant number before first question and at conclusion.

Use prompt questions to generate detailed, in-depth responses.

- What do you think about prescribing opioids for patients who are discharged from the ED?

- How do you make decisions whether to prescribe opioids to patients who are discharged from the ED?

  – What resources do you use to help you decide whether to prescribe opioids on discharge?

- Are you aware of any guidelines about opioid prescriptions for patients discharged from the ED?

  – How do you use opioid guidelines in your practice?

  – What do you think about guidelines for opioid prescribing?

  – How do you use research findings or clinical evidence in the management of pain?

- How do you use prescription drug monitoring programs in your practice?

  – What is your awareness of prescription drug monitoring programs?

  – Does your state have a prescription drug monitoring program?

  – What is your opinion about prescription drug monitoring programs?

- Could you describe a specific professional experience that you have had related to opioids in the ED? Please tell us the story in some detail.

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Table 1

Participant characteristics (N=61)

Characteristic	Total, No. (%)
Sex	
Female	24 (39)
Male	37 (61)
Age, by group, y	
25–29	8 (13)
30–39	24 (39)
40–49	11 (18)
50–59	10 (16)
>60	8 (13)
Years in practice	
Resident physician (1–4)	17 (28)
4–9	11 (18)
10–19	16 (26)
20–29	8 (13)
>30	9 (15)
Practice setting	
Academic (teaching) hospital	34 (56)
Community hospital	23 (38)
No response	4 (7)
Region	
Northeast	17 (28)
Midwest	13 (21)
South	20 (33)
West	8 (13)
No response	3 (5)

Table 2

Domains, Themes, Representative Interview Quotes, and Research Hypotheses from Emergency Department (ED) physicians regarding Prescription Dug Monitoring Programs (PDMPs)

Domain	Theme	Representative Quotation	Research questions
Barriers and Facilitators to PDMP Use	**Awareness**	"I have read a few academic papers that have discussed about the decreasing in opiate prescription abuse and abuse of the system with these monitoring programs. But, I know there's a number of legal issues to get through and not all states have them as of yet"	Looking ahead, how do we support the development of nation-wide PDMPs?
	Access and Time	"Yeah, I mean, it takes time to log-in, whatever time it takes to log-in and do this, in an busy ER, if you're the attending and there are four residents that are presenting cases to you and you're seeing patients on your own, I mean, that could be a little bit – it'd be nice if there was somebody else who could do it for me, like a clerk or something like that could run the report for me."	Does expanding PDMP* access to resident physicians and mid-level providers improve e patient care, PDMP use and work flow in the ED increase use and improve care?
How Physicians Use PDMPs	**Frequency**	"Whether I check our state's prescription monitoring program, pretty much on every single patient with pain at this point because there's – it's crazy what it reveals."	Does frequency of use quantitatively predict or change a provider's opioid prescribing patterns?
	Patient Factors and Clinical Impressions	"when it goes off in the back of your head and you're like is this somebody who's got an opioid problem and I'm just going to be feeding it? So you go and you look them up and what's interesting in my gestalt is that I'm often wrong. I'm just convinced this person is playing me. I go look him up. Absolutely nothing in the database and okay, I was wrong and I was really glad that I treated them nicely the whole time, you know." "I feel like it gets used most when there's a higher suspicion that there is misuse or abuse of the drugs. " "Or, if I think that their story is somehow not uniform, if there's any discontinuity in the story. And, the discontinuity, that's what is really subjective. I don't have a digital way of doing that. Pain, out of portion of findings – then I will look, access."	What are best management practices? How and when should PDMPs* be accessed? What are the guidelines for who should be screened with the PDMP*?
Alternative PDMP Use	**PDMP for provider-patient education**	"I'll actually go in and say I understand you're having pain. I am more than happy to give you something other than Percocet or write a prescription for something that is not a narcotic, but I am concerned. Did you realize that in the last 5 months you have had 540 Percocet's prescribed to you? I've had several people go I have? They didn't realize that they were actually taking that much pain medicine. Then I try to open up a conversation of you can become addicted to these pain medicines. Your body can become dependent on them just like a heroin addict and it really – some people are like well I don't wanna be on these medicines forever and it gives them kind of an eye opening" "it's very helpful in having the discussion of, I'm not going to prescribe you any opioids or narcotics at this time because of this and actually I think patient response is – it's kind of like, you caught me, sort of thing, or you know – so, I think it makes it easier and it avoids a little bit of argument because there's hard evidence that you're abusing the system" "At the same time, the one that you print out the four pages of narcotics filled in this last year, I just I use that as a teaching tool" "There are a few patients that have actually admitted that they have an addict problem and I've gotten them addiction resources and gotten a social worker to come talk with them and that sort of thing."	Do PDMPs create a space for improving communication, education, and understanding of the risks of opioids? Does PDMP usage by providers improve provider empathy? Does PDMP use by providers lead to improved strategies of pain management outcomes among patients?
	Novel utility/ Connecting with patients	"We're trying to make it less punitive, we don't really want it to be punitive because it's almost like a psychiatric problem or something like that and so we try to explain that, but we use it frequently."	Does PDMP use decrease ED visits by patients seeking opioids? What are patient perspectives on PDMP usage?

Domain	Theme	Representative Quotation	Research questions
		"But, I use it for a lot of other things. Things like, trying to see how many providers they have. Talking to the patients. I often bring it to the patient to try and get to the bottom of what's going on, why they're in the emergency department that day for their chronic condition, why we can't get them adequate follow-up, what's going on with that follow-up. I use it for medication interactions, to make sure that they're not on medications that put them at higher risk for morbidity or mortality in the long run.	

Table 3

Patient triggers for physician decision to access the PDMP*

requesting narcotics by a certain name
claiming allergies to non-opioid medications (NSAIDs) [†]
asking explicitly for pain medication
inconsistent story lines
patients new to the hospital system
specific kinds of complaints (i.e., back pain, dental pain)
known previous ED[‡] use for chronic pain issues
prior evidence of doctor-shopping
patients from "families" who are known drug seekers
inconsistency between patient reporting and physician physical exam
no organic/identifiable source of pain
previous AMA[§] departures from the ED[‡]

[*] PDMP=prescription drug monitoring program

[†] NSAID = non-steroidal anti-inflammatory drug,

[‡] ED = emergency department,

[§] AMA = against medical advice