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The Prescription Opioid Epidemic: Social Media Responses to the Residents’ Perspective Article

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In June 2014, *Annals of Emergency Medicine* collaborated with the Academic Life in Emergency Medicine (ALiEM) blog-based Web site to host an online discussion session featuring the *Annals* Residents’ Perspective article “The Opioid Prescription Epidemic and the Role of Emergency Medicine” by Poon and Greenwood-Ericksen. This dialogue included a live videocast with the authors and other experts, a detailed discussion on the ALiEM Web site’s comment section, and real-time conversations on Twitter. Engagement was tracked through various Web analytic tools, and themes were identified by content curation. The dialogue resulted in 1,262 unique page views from 433 cities in 41 countries on the ALiEM Web site, 408,498 Twitter impressions, and 168 views of the video interview with the authors. Four major themes about prescription opioids identified included the following: physician knowledge, inconsistent medical education, balance between overprescribing and effective pain management, and approaches to solutions. Free social media technologies provide a unique opportunity to engage with a diverse community of emergency medicine and non–emergency medicine clinicians, nurses, learners, and even patients. Such technologies may allow more rapid hypothesis generation for future research and more accelerated knowledge translation. [Ann Emerg Med. 2015;1-9.]

INTRODUCTION

*Annals of Emergency Medicine* and Academic Life in Emergency Medicine (ALiEM) have conducted a collaborative journal club as a shared initiative to promote awareness of key emergency medicine literature, to facilitate knowledge translation, and to provide an educational resource to teach critical appraisal to emergency physicians while drawing engagement from a broad audience through social media platforms.1-3 Because of its increasing popularity, this collaboration now extends to the *Annals* Residents’ Perspective series.4 In this installment, we feature the 2014 article by Poon and Greenwood-Ericksen, “The Opioid Prescription Epidemic and the Role of Emergency Medicine.”5

Opioid misuse and addiction are increasing and serious problems in the United States, with associated fatalities increasing 4-fold between 1999 and 2010 and approximately 100 daily deaths from prescription opioids.6 The emergency department (ED) has experienced significant increases in visits related to nonmedical use of prescription opioids and, in parallel, significant increases in the number, quantity, and potency of opioid prescriptions dispensed from the ED.7-9 The original Residents’ Perspective article5 discussed the challenges of practicing in the context of the opioid epidemic and the daily struggle to alleviate pain while trying to avoid initiating or perpetuating opioid misuse. The article presented several means of supporting emergency physicians in these goals, including adoption of ED prescribing guidelines; use of prescription drug monitoring programs, or statewide electronic records of prescribed substances for each individual; and a standardized resident education curriculum on opioid prescribing.

With the *Annals* article as a launching point, ALiEM further explored this topic with free social media platforms, including a Twitter conversation, Web site discussion, and live videocast with the authors and key experts. This article aims to organize and summarize the responses from the global social media community and to propose potential solutions and recommendations. Objective Web analytics will also be reported for the multiple digital platforms used.

MATERIALS AND METHODS

The *Annals* editors selected the Residents’ Perspectives article, and ALiEM chose 4 facilitators for their expertise in medical education and active presence on social media. One is an experienced blogger on ALiEM (M.L.), and all have active Twitter accounts with greater than 100 followers (S.K., @SKobner), greater than 300 followers (K.S., @K_ScottMD), greater than 1,500 followers (E.C., @choo_ek), and greater than 7,500 followers (M.L., @M_Lin) at the time of the discussion.
The discussion was hosted by ALiEM (http://aliem.com), which is a public, WordPress-based, educational blog Web site created in 2009. ALiEM has greater than 1 million page views annually, greater than 19,600 Facebook fans, greater than 500 Google+ followers, and greater than 500 e-mail subscribers. The Web site hosts a broad range of topics relevant to academic and community emergency physicians, including clinical pearls, reviews of journal articles, faculty development discussions, and medical education topics. The facilitators’ goal during the discussion was to encourage sharing and reflection on preselected discussion questions (Figure 1) in regard to current perspectives about opioid prescribing. The 4 open-ended questions were selected by the authorship team to maximize discussion involving the core teaching points from the highlighted article.

From August 11 to August 15, 2014, the prescription opioid discussion was hosted on the ALiEM Web site, with comments moderated both on the blog Web site and Twitter, similar to the format of previous ALiEM-Annals Residents’ Perspectives discussions.4 Promotion for the discussion included notices on the ALiEM Web site, ALiEM Facebook page, ALiEM Google+ page, and facilitators’ individual Twitter accounts. Ongoing promotion during and after the discussion occurred with tweets including the #ALiEMRP hashtag from the Annals and facilitators’ Twitter accounts.

On August 12, 2014, a live panel discussion was hosted on Google Hangout on Air, featuring both authors of the highlighted article, Sabrina Poon, MD, and Margaret Greenwood-Erickson, MD, MPH, emergency medicine residents at the Brigham and Women’s Hospital/Massachusetts General Hospital Harvard Affiliated Emergency Medicine Residency Program. Esther Choo, MD, MPH (Brown University), a public health researcher with expertise in substance use disorders, who has published on medical education and use of social media in academia, acted as the session host and moderator; other panelists included published experts in the field of opioid prescription misuse, David Juurlink, MD, PhD (University of Toronto) and Maryann Mazer-Amirshahi, PharmD, MD, MPH (MedStar Washington Hospital Center), and medical student Scott Kobner, BS (New York University; ALiEM-EMRA Social Media and Digital Scholarship fellow), who was asked at the end of the session to provide the perspective of a junior trainee. Figure 2 lists the questions posed to the panelists. Michelle Lin, MD (University of California, San Francisco), and Kevin Scott, MD (University of Pennsylvania), participated off camera.

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1. The authors cite the Joint Commission’s pain control mandate (ie, “pain is the fifth vital sign”) and the emphasis on patient satisfaction scores as critical factors in the increase in opioid prescribing over the last decade. To what extent do these factors influence your use of opioid pain medications, both during the ED visit and upon discharge?

2. The authors discussed potential barriers to prescription monitoring programs (PMPs). In your practice, are PMPs assisting in appropriate and safe opioid prescribing practices? If not, why? If so, how?

3. Only three states have adopted formal guidelines for opioid prescribing from the ED. Do you think these are/will be helpful? Why do you think they have not been adopted more widely?

4. The authors propose a resident curriculum for opioid prescribing in the ED, including lectures, journal club, case-based learning, and simulation. What have been your experiences with formal instruction around opioid prescribing? What do you think are the most effective ways to shape physician behavior around this issue?

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**Figure 1.** Featured ALiEM blog questions.

**Figure 2.** Questions posed to videocast panelists.
by live-tweeting the event. The videocast was automatically uploaded in real time for public viewing to ALiEM’s YouTube account (ALiEM Interactive Videos) at http://youtu.be/6b3a9ckvwB4.

Written transcripts from Twitter, the blog Web site, and the videocast discussions were analyzed for broad themes and subthemes by 1 author (E.C.). The remaining authors reviewed these themes and subthemes to corroborate inclusion of key discussion points, organization, and comprehensiveness.

Web analytics were recorded for the 14-day discussion period (August 11 to August 24, 2014). A 14-day discussion period was set according to previous online journal club events hosted by ALiEM and Annals because often intermittent conversation continues for some time after the featured discussion period. Google Analytics, the ALiEM Social Media Widget, YouTube Analytics, and Symplur were used to track metrics for viewership and engagement on the Web site, various social media platforms, YouTube, and Twitter, respectively. These metrics are freely available digital resources that allow users to track and filter Web traffic data, such as by dates and geography. The number of comments and words per comment in the Web site discussion were also calculated, excluding the initial comments by the facilitators and all references.

### RESULTS

The 14-day analytics data for the multiplatform discussion about the opioid prescription epidemic demonstrated a geographically diverse readership on the ALiEM Web site page (1,081 unique readers from 41 countries) and dissemination on Twitter (210 tweets). Additional analytics are summarized in the Table. The global geographic distribution of participants is outlined in Figure 3.

### Summary of the Online Discussion

A discussion transpired on the blog, Twitter, and Google Hangout video that not only covered the 4 blog questions but also generated additional related debate. The major domains discussed were as follows:

**Theme 1: Physicians lack knowledge about prescription opioids.** Our discussants thought that emergency physicians had knowledge deficits that made addressing the opioid problem challenging (Figure 4). These include a poor understanding of the scope of the opioid problem. In the videocast, Juurlink observed that “[s]mart and well meaning people suggest that this is not an epidemic at all, or that the epidemic of pain is what we should be focused on.” Participants in both the panel and the blog made the observation that physicians lack knowledge about

| Table: Aggregate analytic data from discussions for the first 14 days of the event. |
|---------------------------------|---------------------------------|---------------------------------|------------------|
| **Social Media Analytic Aggregator** | **Metric** | **Metric Definition** | **Count** |
| Google Analytics | Page views | Number of times the Web page containing the post was viewed | 1,262 |
| | Users | Number of times individuals from different IP addresses viewed the site (previously termed “unique visitors” by Google) | 1,081 |
| | Number of cities | Number of unique jurisdictions by city as registered by Google Analytics | 433 |
| | Number of countries | Number of unique jurisdictions by country as registered by Google Analytics | 41 |
| | Average time on page | Average amount of time spent by a viewer on the page | 3 min 49 s |
| ALIEM blog | Number of tweets from page | Number of unique 140-character notifications sent directly from the blog post by Twitter to raise awareness of the post | 124 |
| | Number of Facebook likes | Number of times viewers “liked” the post through Facebook | 24 |
| | Number of Google+ shares | Number of times viewers shared the post through Google+ | 1 |
| | Number of site comments | Comments made directly on the Web site in the blog comments section | 17 |
| | Average word count per blog comment (excluding citations) | | 171 |
| Symplur Analytics for Twitter hashtag #ALiEMRP | Number of tweets | Number of tweets containing the hashtag #ALiEMRP | 210 |
| | Number of unique Twitter participants using the hashtag #ALiEMRP | 75 |
| | Twitter impressions | How many impressions or potential views of #ALiEMRP tweets appear in users’ Twitter streams, as calculated by number of tweets per participant and multiplying it by the number of followers that participant has | 408,498 |
| YouTube Analytics | Length of videocast | Total duration of recorded Google Hangout videoconference session | 31 min 46 s |
| | Number of views | Number of times the YouTube video was viewed | 168 |
| | Average duration of viewing | Average length of time the YouTube video was played in a single viewing | 9 min 50 s |
the harms of prescription opioid medications and the prevalence of opioid abuse.

“Pain is such a common complaint, and as physicians we are conditioned to make people feel better and believe that opioids are our best means of doing so…. Despite our perception of the role of these drugs, they just don’t work that well.”—Juurlink

“I was taught to be very liberal with prescription of opiates [sic]…. I think we believed we were doing what was best for the patient. As a result, lots of patients with ankle sprains walked out the door with an Rx for 20 Vicodins. This is crazy. There’s little, if any, evidence that opiates are necessarily better than other medications for pain.”—Anand Swaminathan, MD (New York University)

Theme 2: There is a lack of consistent medical education on use of opioids. Participants noted an absence of formal teaching in regard to pain control and use of opioid medications from the preclinical years of medical school through residency training, especially compared to education on other classes of medications. In the videocast, Kobner described a “huge lack of medical school education on this topic,” suggesting that opioid-related content should be introduced through didactic instruction and again in context at the bedside. Poon, Greenwood-Ericksen, and other residents participating in the discussion online described the educational influence of the heterogeneity in attending physician practice and lack of specific guidelines. Resident trainees are often left uncertain and confused about the appropriate place for opioids in their clinical practice and how to use and judiciously prescribe without contributing to the problem of opioid use disorders:

“I saw a young woman who was demanding Vicodin for her chronic back pain…. The attending told me…‘You can kind of do what you want.’… I remember thinking, ‘Gosh, how can there be so much grey area?’… I really didn’t know how to have a conversation with her…about her risks…. I sat down to write the prescription and I realized I didn’t even know what opioid was in Vicodin, wasn’t quite sure what the normal dose was, and I didn’t know how many pills were considered normal.”—Greenwood-Ericksen, MD, MPH

As a new intern, I feel like I have a general framework of what meds to order for an asthma exacerbation, or STEMI, or a handful of other protocol-driven scenarios. Analgesia is much murkier.”—Matthew Klein, MD, MPH (Northwestern University)

Theme 3: There needs to be a balance between curtailing excessive upward “drift” in physician opioid-prescribing practices and effective pain management. Twitter participants described observing not only an increased use of opioids over time but also the prescribing of more potent opioids (Figure 5).10

Mazer-Amirshahi described similar findings from her recent research on opioid-prescribing trends in adult and
pediatric EDs.\(^8,9\) Her studies noted an increase in both the number of opioid prescriptions and the potency of use of opioids in the ED. In the adult ED, there was a 50% overall increase in prescription opioid use and 100% increased use of hydromorphone between 2005 and 2010. Mazer-Amirshahi hypothesized that this reflected a lower prescribing threshold on the part of clinicians. Panels thought that the ED population also seems much more used to receiving prescribed opioids from their primary providers and more opioid tolerant than they were 10 years ago. Our panel noted how inured physicians have become to the potency of these medications. “We have lost the respect for these drugs that we had twenty years ago,” said Juurlink, pointing out that physicians are now used to having a substantial number of their patients receive long-term opioid therapy.

In the videocast, Mazer-Amirshahi also described a substantial increase in opioid use among low-acuity patients (triage levels 4 and 5), as well as a shift in indications for use, including use when not clearly indicated. For example, another of her studies demonstrated more use for migraine headaches,\(^11\) even though opioids are not recommended as first-line therapy for this condition.\(^12,13\) This kind of use—incongruent with clinical practice guidelines—raised questions on Twitter about the quality of emergency medicine care in regard to pain control and its potential conflict with patient satisfaction measures. As stated by Anton Helman, MD, (University of Toronto) this “suggests poor [patient] centered care” (Figure 6).

However, discussion participants also expressed an ongoing focus on treating pain effectively and concern that pain control was more inexact than uniformly overdone. For example, Ari Friedman (University of Pennsylvania) emphasized the importance of continuing to meet patients’ needs even as physicians strive to reduce inappropriate opioid use (Figure 7).

These concerns were echoed by Marnie Rackmill, who participated in the blog discussion as a patient. Rackmill shared a story of being mistaken as opioid seeking when presenting with pain. Ultimately, she was prescribed them. “Did I need an opioid? I don’t know. Toradol might have been just as useful, but nobody gave it any consideration.” Rackmill’s providers, to her knowledge, did not look up her medication history or access the state’s available prescription drug monitoring program, which would have shown a limited history of prescribed opioids.

“The initial labeling of patients—either by the triage nurse or whomever—without looking into their history, diagnosis, or needs is quite concerning. In this case it created very poor pain management…. Overall, it seems to me that before deciding on a treatment plan, anyone (including a nurse) treating or diagnosing a patient should look into the patient’s history, especially if it is on file, be willing to listen to what the patient says, and open to the idea that something may actually be wrong.”

Theme 4: There are no simple answers; solutions will need to be multifactorial. Panelists lauded the emerging solutions for the opioid crisis discussed in the Residents’ Perspective—including prescription drug monitoring programs, state- or citywide opioid use guidelines, and structured, standardized education around opioids—as well as policy changes, such as reclassifying hydrocodone as a schedule II drug. However, participants also mentioned barriers to some of these measures. For example, routine use of prescription drug monitoring programs is impeded by poor awareness of their existence, lack of availability, technical difficulties (eg, forgetting log-on passwords), or limited time to access them in the busy ED.\(^14\) Participants generally felt the need to advocate greater accessibility of prescription drug

Figure 5. Twitter commentary.

Figure 6. Twitter commentary.

Figure 7. Twitter commentary.
monitoring programs. Voluntary opioid-prescribing guidelines are in limited use, but more information is needed about the extent of their adoption and their effect on prescribing practices. Although traditional curricula on pain management and use of opioids may take years for formal adoption and dissemination, Jeanmarie Perrone, MD, (University of Pennsylvania) suggested that online education platforms and open-access resources might provide a more immediate educational solution. “We could tackle the knowledge gap by producing a few podcasts highlighting several case based challenging patient scenarios and hosting them on a FOAMed Web site or existing pain curriculum site.” One open-access Web site she referenced was Painfree ED (http://www.painfree-ed.com/), created by Sergey Motov, MD, which serves as a repository of slides, PDF handouts, local protocols, and other resources in the area of pain management education in the ED.

Given the limitations of system-based resources, panelists discussed the ongoing need for physicians to alter their practices on an individual level. Mazer-Amirshahi emphasized that all misuse starts somewhere, so practitioners should consider the potential influence of even a single unnecessary prescription: “Is that one prescription I’m giving someone going to contribute to the problem of abuse and addiction?” She also emphasized the importance of caution in using opioids during the ED stay, warning that acute administration of opioids may also lead to subsequent prescription opioid use or reinforce existing patterns of misuse.

Poon advised considering the following when treating pain in the ED: “Do I think this patient would benefit from opioid medication more than it would harm them?… What should I prescribe them? And not only what, but how much, for how long, what kind, and also what else might help them?”

Greenwood-Erickson emphasized the need for individual practitioners to be willing to have the “tough conversations” with patients about the dangers of opioids, “and if we do think they are at risk for abuse and misuse, address this specifically, rather than shying away from it.” Addressing and tempering expectations about our ability to reduce pain may also be a part of the conversation:

“What we really need are drugs that work better…and are free of toxicity. That’s likely to be a long way off…[but] until then, we have to lower our expectations, and we have to have patients lower their expectations as well.”—Juurlink

These thoughts were echoed on Twitter by Taylor Zhou, MD, an anesthesia resident from Canada (Figure 8).

On the ALiEM blog, Swaminathan also discussed the importance of referral to outpatient treatment services for patients with opioid use disorders: “Everyone in whom you...”

LIMITATIONS

Our results were generated by posing a series of questions about the prescription opioid epidemic to stakeholders through social media platforms. In this curated review of the multiplatform discussions, our findings are at risk for selection bias in that individuals who engage in social media discussions may differ from the broader stakeholder populations. It is thus unclear whether all stakeholders are represented in this discussion because it was voluntary and required use of social media platforms for communication. Also, the views of a vocal minority may have been overrepresented because of the challenges of drawing out more reserved participants to build consensus in a public, online discussion. Our discussion did not distinguish between acute and chronic pain or address the different challenges of practicing in a variety of ED settings; thus, comments specific to a clinical scenario or practice setting may not be generalizable.

A single author conducted the initial analysis of the themes. This may have led to the omission or misinterpretation of comments. Having the themes undergo member checking by the other facilitators reduced such threats to internal validity. Finally, we did not design the discussion to reach saturation, and there may be relevant themes that did not emerge with this format.

In regard to Web analytics, Twitter analytic data depend on participants adding the hashtag #ALiEMRP to their tweet. Those who omitted the hashtag were not included in the Symplur analytics, and thus the number of Twitter participants may be underrepresented in our results. Despite this likely underestimation, there were still 210 tweets by 75 individuals with a broad reach, as defined by a Twitter impression of 408,498.
DISCUSSION

This article presents the results of an ALiEM-Annals collaboration using multimodal social media discussions to explore a timely, relevant question inspired by a Residents’ Perspective article: How do we combat the opioid epidemic within the ED? In examining the emergent themes, we identified concerns about practicing physicians’ knowledge in regard to opioids, inconsistent prescribing practices hampering training of medical students and residents, an ongoing tension between physicians’ obligation to reduce suffering by addressing pain and the desire not to contribute to the prescription opioid epidemic, the need to manage pain with a wider range of modalities, and the need for further development of system-level supports for safe prescribing, such as prescription drug monitoring programs.

Identified solutions to this problem remain in their infancy, with participants expressing frustration with the inaccessibility or limited accessibility of prescription drug monitoring program databases, guidelines, or formal and bedside instruction about opioid prescription practices (ie, how to determine when to prescribe opioids and how much to prescribe). Until such resources are in place, physicians should continue to monitor their own prescribing practices, operating from the principle that opioids are not necessarily the most effective pain reliever and are often not the first line for controlling some types of pain. It is critical to engage patients in conversations about potential harms and alternative means of treating pain in the long term.

Many of the individual experiences described in social media—including frustrations with the lack of effectiveness of our existing pain control efforts, the heterogeneity of physician practice patterns, and the escalation of ED opioid prescribing over time—were explained and corroborated by our expert panel. Clinicians and learners benefit from this multimodal presentation by having their shared experiences contextualized within the larger problem to address both immediate and long-term potential solutions. Furthermore, our blog included the comments of a patient who believed she was mislabeled as a "seeker," a vital reminder that patients are at the center of care. As guidelines and other policies are implemented, it will continue to be important to capture the diverse circumstances, perspectives, experiences, and goals of our patient population and incorporate this information into our approaches to controlling the prescription opioid problem. Social media, in this case, provided a unique opportunity to include a patient perspective in a scholarly dialogue.

Social Media: A New Frontier in Scholarly Discussions

In this third installment of the social media curation series of Annals Residents’ Perspective articles, Web analytic data demonstrate the feasibility of a social media–based, multimodal approach to coconstructive learning and teaching in the growing online community. The blog post received 1,262 page views from 1,081 unique users in 433 cities (41 countries). These large readership numbers, however, resulted in only a small subset providing active comments on the blog, as demonstrated by only 21 comments in this opioid epidemic prescription discussion. In contrast, individuals using Twitter seemed more likely to engage and post a retweet or reply in the discussion, with 210 #ALiEMRP-tagged tweets found. This is likely multifactorial and may include the fact that tweets are brief (ie, 140 characters), the platform encourages a more conversational environment with the ability to tag and reply to particular individuals, and Twitter is a more regularly checked tool than most other Web sites. In the age of digital transparency and online learning, we aim to promote more active engagement through blog comments and tweets as online communities and discussions become more mainstream in medical education.

Analytic data on Twitter activity using the hashtag #ALiEMRP demonstrated a broad reach (408,498 impressions) among a small but engaged community who contributed to 210 tweets. “Impressions” is defined as the number of #ALiEMRP tweets per participant multiplied by the number of followers that participant has. These data are within the range of other popular Twitter-based journal clubs in the fields of nephrology (#NephJC) and urology (#UroJC). Symplur analytics report 213,868 and 606,297 impressions, respectively, and 148 and 775 tweets, respectively, in their January 2015 journal clubs.13 It is still a challenge to determine the significance of the #ALiEMRP data, especially because these 2 other journal clubs are primarily discussions held on Twitter (tweet chats), whereas our discussion was based more on the blog Web site, with Twitter supplementing the conversation.

The live Google Hangout on Air videocast published to YouTube illustrated a proof-of-concept model whereby it is not only possible to virtually gather a geographically diverse group of experts in a medical grand rounds–like panel with minimal inconvenience and without the travel costs but also to host this on a free platform (Google Hangout on Air), with live tweets reporting the conversation and the ability for live viewers to tweet in comments. Although the video garnered only 168 viewers in the first 14 days of publication, it remains easily found on the ALiEM YouTube channel through standard Internet search engines as an archived educational resource.

Overall, this curation series demonstrates that it is possible to engage a global and digitally interconnected community to learn and rapidly share knowledge on timely issues
relevant to emergency medicine practice. Such a discussion contrasts the typical silo- and classroom-based approach to medical education.

CONCLUSION
The medical community continues to struggle with the best way to combat the opioid epidemic. Our multimedia discussion underscored several key challenges for our specialty, including ongoing knowledge deficits, little formal education and training on pain control and opioid use for medical students and residents, and the upward “drift” in use of opioids in the ED. Although there are no easy solutions to the problem, our discussants and other online discussion participants reflected thoughtfully on efforts needed at both the system and individual levels.

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