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Global Emergency Medicine Journal Club: Social Media Responses to the November 2013 Annals of Emergency Medicine Journal Club

### Permalink

<https://escholarship.org/uc/item/5td8g6fp>

### Journal

Annals of Emergency Medicine, 63(4)

### ISSN

0196-0644

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### Publication Date

2014-04-01

### DOI

10.1016/j.annemergmed.2014.01.033

Peer reviewed

# Global Emergency Medicine Journal Club: Social Media Responses to the November 2013 *Annals of Emergency Medicine* Journal Club

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The *Annals* November 2013 Journal Club issue marked one of the first collaborations with Academic Life in Emergency Medicine, a medical education blog, in an effort to promote a worldwide, transparent, online effort to perform critical appraisals of journal articles. The Global Emergency Medicine Journal Club was hosted on the blog for 1 week during November 18 to 24, 2013, with comments moderated on the blog and on Twitter. This summary article compiles the discussion and insights. [Ann Emerg Med. 2014;63:490-494.]

0196-0644/\$-see front matter

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<http://dx.doi.org/10.1016/j.annemergmed.2014.01.033>

## INTRODUCTION

New, practice-changing discoveries traditionally become standard of care through a vertical, 1-way path of knowledge translation. Each discovery is submitted by the scientist for publication in a peer-reviewed journal, is read by journal subscribers, and then is disseminated by academic educators to a wider audience in the form of summarized recommendations in printed textbooks or continuing medical education lectures. Translating new knowledge into actual practice can take months, and often years.

With the advent of social media technologies, such as blogs and Twitter, such knowledge translation follows more of a horizontal, omnidirectional pattern with an accelerated timeline. These platforms provide a means for published authors, educators, practicing clinicians, and learners from different medical specialties to have engaged discussions in a more global and transparent process. Such discussions require that we each have some foundational knowledge on how to critically appraise the literature.

Journal club sessions aim to teach these appraisal skills. These sessions are typically incorporated as part of a residency didactic curriculum and conducted in a classroom setting with a facilitator and a few lead discussants. Learning occurs on a local level and there often is no archived record of the dynamic discussions. Residency programs frequently independently discuss the same landmark articles.

There exist brief reports describing blogs created for the sole purpose of serving as a catalog or discussion platform for journal clubs within a single department or practice group.<sup>1,2</sup> These blogs did not report any objective analytic data about blog or Twitter traffic.

In an effort to conduct a journal club whereby experts and learners from different institutions and countries can participate together, the educational blog Academic Life in Emergency Medicine (ALiEM), with its readership of approximately

1 million page views annually, partnered with *Annals of Emergency Medicine's* established Journal Club series.<sup>3</sup> ALiEM was established in 2009 and is currently a multiauthor, educational Web publishing site, whose mission is to reshape medical education and academia and to look beyond the traditional classroom setting through cooperative social media technologies. This ALiEM-*Annals* partnership pairs a blog with experience in facilitating social media discussions with *Annals'* experts in critical appraisal and evidence-based medicine. To date, this is the first joint journal club between an established journal and educational blog.

## MATERIALS AND METHODS

The *Annals* November 2013 Journal Club issue<sup>4</sup> marked the launch of the joint journal club. There were 3 facilitators, chosen according to their established reputations primarily as experts in critical appraisal (R.P.R.) or medical education (S.R.R., M.L.). All are experienced bloggers (Emergency Medicine Literature of Note, R.P.R.; ALiEM, S.R.R., M.L.). They also have a broad, international Twitter reach, with more than 1,000 (S.R.R.), 2,500 (R.P.R.), and 5,000 (M.L.) followers. The goal of the facilitators was to encourage discussion and reflection in the blogging and Twitter communities in regard to the 4 preselected journal club questions.

The Global Emergency Medicine Journal Club was hosted on the ALiEM Web site for 1 week during November 18 to 24, 2013, with comments moderated on the blog and on Twitter. The initiative was promoted initially by a blog post announcing the dates and format of the discussion. Furthermore, this was announced on the Council of Emergency Medicine Residency Directors and Clerkship Directors in Emergency Medicine listservs.

To avoid cognitive overload and overlapping Twitter discussions, only 1 journal club question was tweeted per day, which was accomplished by each author tweeting these questions

from their respective Twitter accounts, using a specific hashtag reference chosen for the journal club discussion, #ALiEMJC. This tagging feature, built into Twitter, allows discussants to easily aggregate all tweets on a single topic for viewing. Potential discussants, which comprised the entire community reached by ALiEM and the authors' Twitter accounts, were encouraged to respond to questions by tweet or by posting in the comments section of the blog. We also asked participants to consider adding their level of training and location in comments so the geographic and provider diversity could be appreciated.

## RESULTS

Google Analytic data measuring ALiEM blog visitor traffic reported 1,171 page views during November 18 to December 1, 2013, spanning 148 cities in 25 countries (Figure 1). There was an average of 254 hits (SD 87) per question page of the journal club format. Several comments were from authors from the featured article, as well as from related articles.

Twitter analytics also revealed 63 unique Twitter contributors to the discussion, who collectively posted 142 tweets. The tweet reach, or number of unique Twitter account holders who saw any tweet related to #ALiEMJC, was 33,202.

## CURATED SUMMARIES OF SOCIAL MEDIA DISCUSSIONS

Question 1A: The authors use distinct methods for tallying computed tomography (CT) use in the 2 countries. List the biases that could occur in counting CTs by each method.

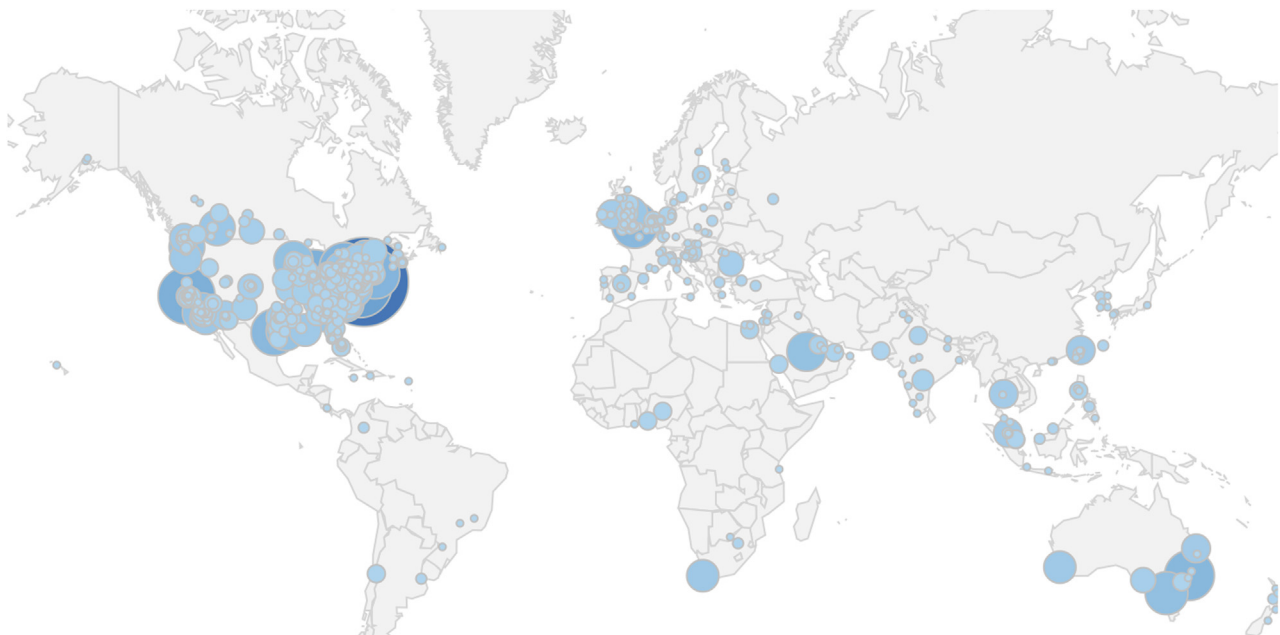
Discussion: Two types of bias came into the forefront of discussion: selection bias and measurement bias (Figure 2). First,

in regard to selection or sampling bias, US federal, military, and Veterans Affairs hospitals were excluded in the National Hospital Ambulatory Medical Care Survey (NHAMCS) data set. Likewise, the Canadian data set was restricted only to those entries that could be linked between the National Ambulatory Care Reporting System (NACRS) and Ontario Health Insurance Plan (OHIP) databases. Furthermore, Dr. Teresa Chan noted that the patient populations in Canada and the United States are different (ie, more penetrating trauma in the United States). Generalizing from these data risks introduces a sampling bias. Second, in regard to measurement bias, in the NHAMCS data set, several CT scans in 1 visit counted as 1 CT, and in the 2003-2004 year, magnetic resonance imaging also counted as a CT. Furthermore, if there were changes to the abstraction methodology year to year in both data sets (which were collected during several years), a measurement bias may have been possible.

Question 1B: Do you think the National Hospital Ambulatory Medical Care Survey (NHAMCS) method is likely to overcount or undercount CTs? What about the method used for calculating use in Ontario?

Discussion: Although there were some disagreements, it was thought overall that the Ontario NACRS/OHIP database was more accurate because of individually counting patient scans from an administrative and billing data set, whereas the US NHAMCS data set may have underestimated CT use because of information being abstracted from charts (Figure 3).

Specifically in regard to the NACRS/OHIP, there was concern about whether the data, mainly abstracted from Ontario, the most populous province in Canada, was generalizable to the remainder of the less-populated country. This bias would lead to NACRS/OHIP's overestimating the rate of CT scanning in



**Figure 1.** Geographic distribution of visitors to the journal club's Web pages on the ALiEM blog during November 18 to December 1, 2013.



**Figure 2.** Twitter discussion of Question 1A.

Canada. In regard to NHAMCS, Dr. Rory Spiegel cited previous studies examining ectopic pregnancies and intubations that demonstrated errors of omission in NHAMCS chart abstraction.<sup>5-7</sup> This would suggest the undercounting of CT scans. In contrast, Dr. David Schwartz responded that other studies evaluating the incidence of CT use in the United States



**Figure 3.** Twitter discussion of Question 1B.

provided estimates of 10.6% and 14.1%, which compare reasonably to the rate detected in this analysis (11.4%).<sup>8,9</sup>

**Question 1D:** Discuss some of the important differences between the current health care systems and medical malpractice environments in Canada and the United States. How might these differences affect CT use in the emergency department (ED)? How might the implementation of the Patient Protection and Affordable Care Act affect these differences?

**Discussion:** Discussants readily recognized the differences between the Canadian and US health care systems and identified several potential influencing factors in different CT usage rates. In addition to poor patient follow-up, many commented that the overriding contributor was a desire for diagnostic certainty in not only Canada and the United States but also South Africa. As noted by Drs. Seth Trueger and Anand Swaminathan, this desire is derived from several sources, including patient satisfaction, pressure from consultants, and motivation to provide answers to patients whenever possible. Expediency in excluding a concerning diagnosis was also noted because it is no longer generally accepted practice to routinely admit patients, for instance, with undifferentiated abdominal pain for serial abdominal examinations.

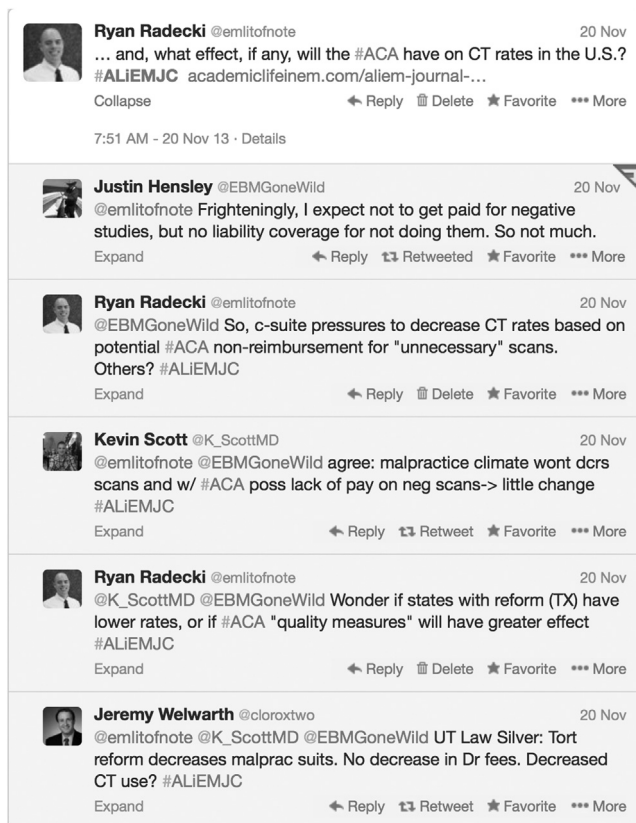
It was acknowledged that the Canadian medicolegal liability system is far less onerous than the American system. Discussants generally thought “defensive medicine,” caused by the more litigious American society, contributed to increased CT use, but only in a minor way. In fact, Dr. David Schwartz challenged readers to think about whether defensive medicine truly affects the overordering of CT scans at all. Is it defensive medicine, or is it merely a reflection of providers’ “attitude in a difficult clinical situation with concomitant diagnostic uncertainty”?

Because of the dearth of evidence in regard to the magnitude of the effect of liability concerns, Dr. Ryan Radecki suggested that further research be performed to compare states with medicolegal reform, such as Texas, with those without.

An important point by Drs. Seth Trueger and Justin Hensley was that physicians do not have disincentives to reduce CT scanning by the current system of fee-for-service reimbursement model (Figure 4). The effect of the Patient Protection and Affordable Care Act on CT rates was thought to be most closely tied to its financial effects on providers. If resource use were somehow tied to provider reimbursement, one might expect CT rates to decrease.

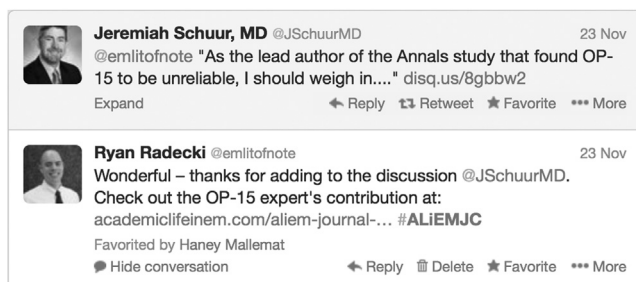
Finally, an interesting global perspective was provided by Dr. Anne Smith from South Africa, which has a socioeconomically segregated health care delivery system with private and public hospitals. Anecdotal observations in private hospitals noted higher rates of CT scanning as a result of expectation and reimbursement. However, in the public institutions with limited resources, CT scan rates are anecdotally much lower and better incorporate validated decision instruments to justify CT use.

**Question 1E:** The Centers for Medicare & Medicaid Services proposed instituting a new process metric, Outpatient Measure 15 (OP-15), use of brain CT in the ED for atraumatic headache.



**Figure 4.** Twitter discussion of Question 1D.

OP-15 measures the percentage of ED visits for atraumatic headache (ie, ED billing codes for tension, cluster, migraine, and nonspecific headaches) among Medicare beneficiaries who have a brain CT performed on the same day. ED patients who are admitted to the hospital and those whose secondary diagnoses include codes related to subarachnoid hemorrhage, transient cerebral ischemia, and tumor/mass are excluded from the denominator. The public reporting of OP-15 is presently postponed to allow time for refinement of the measure by a technical expert panel. However, if this indicator is fully instituted, would the threat of decreased reimbursement and public reporting of use decrease the ordering of CTs in patients older than 65 years and with atraumatic headaches?



**Figure 5.** Twitter discussion of Question 1E.

Discussion: Strong opinions were voiced in defiance of OP-15 by discussants. Dr. Schwartz tweeted, "OP15 would increase misdiagnosis rates, if CTs decrease." Most discussants simply believed that OP-15, as a rule, was inadequately sensitive to encompass all clinically indicated CT scans. Dr. Swaminathan noted that, despite years of research, it is still challenging to balance CT use and missed diagnoses of subarachnoid hemorrhage. The Ottawa Subarachnoid Rule, published in the *Journal of the American Medical Association* in 2013 by Perry et al,<sup>10</sup> demonstrated an adequately sensitive quality measure (100%) but it may essentially be ineffective because of its low specificity (15.3%).

Building an effective quality measure prompted further discussion of the danger of a "retrospectroscope" for determination of medical necessity. Dr. Chan recommends the use of structured protocols and education as more valuable rather than the tying of reimbursement to specificity. Dr. Jeremiah Schuur, the lead author of the publication critiquing OP-15, agreed with this multipronged approach (Figure 5).<sup>11</sup> These approaches include further development and dissemination of radiology appropriateness criteria, expansion of imaging decision support in electronic health records, and policies addressing defensive medicine and patient preferences for advanced imaging.

## CONCLUSION

This inaugural ALiEM-Annals Global Emergency Medicine Journal Club initiative demonstrates that an asynchronous worldwide discussion is feasible. Blog and Twitter analytic data suggests there is global interest for this educational endeavor and a broad community of clinicians who are willing to participate. With this curated summary, we hope to garner more mainstream momentum and wider support especially from those who do not normally participate on social media platforms. The ultimate goal is to accelerate the translation of data-driven evidence to provide optimal patient care. Future journal clubs will focus on improved engagement strategies such as using live videoconferencing technologies hosted on ALiEM's YouTube channel.

*The authors acknowledge the #ALIEMJC Twitter contributors: @ACOEPRC, @Alia\_dh, @Alsugairmd, @Blibertad, @Brent\_Thoma, @CaptainBasilEM, @Carlberdahl, @CHsu1012, @Cloroxtwo, @Datagoodies, @Deesmaan, @Dilettantemd, @Docamyewalsh, @Docschull, @DrRobertGlatter, @Emjclub, @Emlitofnote, @EMSwami, @ERCosthacker, @Jurbntz, @k2optimist, @K\_ScottMD, @LaurieMcGillEM, @Maimonides\_EM, @MarcoMavro, @Mdaware, @M\_lim, @NickSawyerMD, @Njoshi8, @N\_desouza, @PharmERToxGuy, @Rfidsdoc, @ShannonOMac, @Srrezaie, @TChanMD, @TheSGEM, @UPennEM, @Velianton, @Wallis\_lee; and the blog participants: Drs. Tyler Barrett, MD, Teresa Chan, MD, Michelle Lin, MD, Ian Mitchell, MD, Ryan Radecki, MD, Salim Rezaie, MD, Jeremiah Schuur, MD, David Schwartz, MD, Kevin Scott, MD, Anne Smith, MBChB, Rory Spiegel, MD, Anand Swaminathan, MD, and Seth Trueger, MD.*

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*Funding and support:* By *Annals* policy, all authors are required to disclose any and all commercial, financial, and other relationships in any way related to the subject of this article as per ICMJE conflict of interest guidelines (see [www.icmje.org](http://www.icmje.org)). The authors have stated that no such relationships exist and provided the following details: Funded by a training fellowship from the Keck Center of the Gulf Coast Consortia (PRP), on the Training Program in Patient Safety and Quality, Agency for Healthcare Research and Quality T32HS017586.

*Publication dates:* Received for publication December 6, 2013. Revision received January 29, 2014. Accepted for publication January 31, 2014.

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