

## Social Media and Physician Learning

*Is It All Twitter?*

by JAN GREENE

*Special Contributor to  
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The post on Michelle Lin's Academic Life in Emergency Medicine blog offered a perspective from Salim Rezaie, MD, on how to interpret the subtleties of a particular ECG reading in the emergency department. Within a day, the post had drawn comments by 2 prominent educators in emergency cardiology (Amal Mattu, MD, professor at the University of Maryland, and Stephen Smith, MD, associate professor at the University of Minnesota).

For Lin, who teaches at University of California, San Francisco, this was just one example of how the online world can offer rapid, high quality thinking on important clinical issues. "They gave a very thoughtful review of the content," said Lin, and she compared that interaction to the relatively slow process of traditional publishing and peer review. "You're able to reach across the world almost instantaneously. Information technology has really transformed how we learn and what we learn."

Social media and other types of online collaboration are fundamentally changing the way physicians learn and update their knowledge throughout their careers, according to followers of a movement recently dubbed FOAMed Free Open Access Meducation. The movement's most visible adherents practice emergency

medicine in Australia, Europe, and the United States and argue that online tools such as medical blogs and Twitter offer substantial benefits over the traditional model of keeping up to date on research by reading print journals in a library.

Some proponents of online medical collaboration go even further and argue that online commenting on research articles offers a superior model to the traditional print peer review process: that it can be more transparent and reduce barriers of cost and national borders.

In general, though, much of the enthusiasm around FOAMed centers on the ability of participants to share opinions about new research, suggestions on clinical technique, and other ideas rapidly through Twitter and blogging. The term was coined in mid 2012 by a pair of Australian emergency physicians who blog on [Lifeinthefastlane.com](http://Lifeinthefastlane.com). Participants use the #FOAMED hashtag to organize their Twitter activity; there's also GoogleFOAM, a special search engine; LITFL Review, a regular digest of the best of the Twitter feed; and the Global Medical Education Project, meant to offer free, high quality medical education content throughout the world.

The flow of information thus far focusing largely on emergency medicine and critical care has allowed participants to "learn something that changed their practice, got them out of a sticky situation, or that helped them to teach

others and save lives," wrote Chris Nickson, MD, a physician in Australia, in a post on the [KevinMD.com](http://KevinMD.com) blog. Emergency medicine resident Lauren Westafer (The Short Coat blog) wrote that she could follow highlights of a Society for Academic Emergency Medicine conference through Twitter, including commentary and debate on the sessions, all "while seeing 35 patients a day in a rural Alabama family medicine clinic." FOAM enthusiasts also point to the benefits of free access to the latest in medical thinking for rural and international physicians.

### ABSENCE OF EVIDENCE

There aren't a lot of data to support the idea that physicians learning through online collaboration is any better than the traditional ways. A recent review of the topic found 14 useable studies, only 1 of which was randomized, and concluded only that the technique merited further investigation.<sup>1</sup>

Dan Sullivan, editorial director of *Annals of Emergency Medicine*, has been seeking solid evidence that social media methods actually work in educating physicians as well as or better than traditional methods. *Annals* is investigating ways to use online tools to serve readers with more accessible information, Sullivan said, but is moving cautiously to adopt only methods that maintain the quality and credibility readers depend on. *Annals* has a social media editor and a task force looking at ways to expand social media's promptness, immediacy, and personalization to the benefit of its readers, and the new Web platform due next year should make the traditional content available in more flexible and user friendly ways and for readers to share their views with others.

FOAMed boosters agree that online methods of vetting medical ideas should

be held to rigorous scientific standards. And although some of that work is ongoing, particularly in such venues as the *Journal of Medical Internet Research*, they acknowledge the field is so new there's not a lot to go on so far. "That's the golden ring of social media," said Bryan Vartabedian, MD, a longtime medical blogger (33 Charts blog) who develops programs in digital literacy at Baylor College of Medicine. "It's difficult to achieve, and reliable outcomes have yet to emerge."

Medical futurist Bertalan Mesko, MD, PhD, also supports the idea that the scientific method be applied to social media interactions by physicians. "We must follow the path of evidence based medicine even when using social media platforms for communication or collaboration," wrote Dr. Mesko in an e mail from his base in Budapest, where he manages the curated medical social media site [Webicina.com](http://Webicina.com).

## ONLINE METHODS CHALLENGE TRADITIONAL PEER REVIEW

Many online collaborators believe so strongly in the fast moving, open vetting medical ideas through blogs and Twitter that they'd like to see the merits of original research be debated online rather than wending its way through a closed peer review process. Dr. Vartabedian predicts that "the review of ideas and thoughts and beliefs will happen postpublication rather than happening in the prepublication phase before they are released."

He argues that there are severe limitations to the traditional prepublication review process, with a single editor gatekeeper referring articles to a small, selected group of reviewers. Although that carefully controlled process may reduce the risk that bad information infects the research, it also relies on a limited group of people making the decisions.

Lin believes social media are challenging the traditional methods of vetting medical ideas. "It begs the question

of whether prepublication peer review should be the standard of quality, because from the perspective of someone who has reviewed some articles, it's not that rigorous and it's behind closed doors," she said.

The most prominent critic of traditional peer review is Richard Smith, former editor of the *British Medical Journal*. As early as 1997, he was writing about the limitations of the process, arguing that it is "slow, prone to bias, open to abuse, possibly anti-innovatory, and unable to detect fraud." In an April 2011 blog post, Smith argued for a wider, online examination of scientific articles in a postpublication review process, both formally and informally by online sharing and commenting, "by the many rather than the few."<sup>2</sup>

Dr. Vartabedian supports the idea of the democratization of scientific review online, particularly compared with the traditional debate in journal letters to the editor, which are limited. "I don't need the *New England Journal of Medicine* or *British Medical Journal* as a platform for being critical of any study," Dr. Vartabedian says. "There are other venues for dialogue besides journals. This idea that we need to be having these conversations within the confines of some traditional construct of a journal... We're on top of the most remarkable shift in modern medical history, and every physician has the capacity to offer their views."

Dr. Vartabedian and Lin both argue that physicians are trained to be skeptical of new information and are capable of reading a study or a Twitter post critically and coming to their own conclusions.

That may be, stated Michael Callahan, MD, editor in chief of *Annals of Emergency Medicine*, but it is important not to confuse blogs, e mails, and tweets with formal detailed peer review of a full scientific article. He compared these digital media with the traditional "curbside consultation," the brief research or news abstract, or chatting with a colleague in the break room.

By contrast, he wrote in comments solicited for this article that "peer review offers the opportunity to identify subtle

but important limitations and weaknesses, make revisions and ultimately build a scientific record for future advances. Social media for medicine are useful for getting quick comment and feedback from an individual, and like a journal, the results are only as good as the source."

Medical journals are experimenting with ways to take advantage of the online world's openness and fast pace, without losing their scientific credibility in the process. Some are experimenting with new options for postpublication review and commenting online.

Journal editors aren't ready to throw out traditional methods that have mediated scientific progress for centuries. Some argue for social media to supplement the peer review process that's vetting research in journals. "The optimal combination would be to have respected journals continue to carry out prepublication review, but the content would at the same time be available online and discussed online," suggested Paul Schoenhagen, MD, an associate professor at Cleveland Clinic who also edits the *Cardiovascular Diagnosis and Therapy* journal.

## OPINIONS OR OPINIONATED?

Although an online comments process can sometimes produce rich results, such as Lin's ECG example, in many cases it's difficult to get qualified physicians and researchers to express an opinion in a public online forum, argues Schoenhagen. "The number of comments can be very low.... The people who comment are often the most opinionated in one extreme or another. In contrast, the traditional prepublication process relies on impartial reviewers, who stand above the data."

Eric Topol, MD, chief academic officer of Scripps Health in San Diego, is a highly visible speaker about the potential for social media to significantly alter medicine, though he focuses largely on how physicians and patients will use

online methods to change how they relate. Topol, who also edits the online medical Web site Medscape, is not willing to throw prepublication peer review out the window despite his views on social media's huge influence on medicine. Asked what he thought of the idea of prepublication review of research through online commenting and social media, Topol responded by e mail, "I think that would be unreliable."

But he does recognize how Twitter is having a big effect on how published research is viewed. He sees "striking critique that emerges on important papers via Twitter post publication often questioning methods, conclusions, why the paper was even published."

Dr. Mesko agrees that traditional peer review doesn't have to be challenged by the rise of social media. "These processes should be totally separated to make sure content that is academic must keep its academic nature," he said by e mail. "But when we need information and don't know who might have the answer for our questions, curated social media channels can be unbelievably useful."

Online tools have their benefits and limitations, said Dr. Vartabedian. For instance, Twitter is more a curation tool to sort out a huge, unmanageable amount of medical information than a method for serious peer review of research studies. "It used to be that physicians learned in 2 years what they need to know about medicine," he said. "Now that's impossible. Now we're learning to access what we need to know. The idea of human filters is critical. On Twitter, I enlist about 800 really smart people whose eyeballs scour the Internet for me."

## MEDICAL SCHOOL ALREADY CHANGING

Dr. Vartabedian runs a course for medical students on digital professionalism to help digital natives adjust to the world of clinical medicine. He sees young people come onto wards armed with smartphones but using them inappropriately, not realizing that taking a photo that has a patient in the

background who has not consented to his or her image being shared on a case study blog post could be a violation of federal privacy law. "There's an adjustment that has to happen as these digital natives come into the clinical space," he said.

Older professors may find themselves challenged by a student wielding a Twitter post relevant to a clinical choice being made, and they should welcome that discussion, argues Lin. "We have senior faculty who are amazing clinicians and read journals, but then we have this whole group of residents who are immersed in social media, and they do bring an amazing amount of interesting content and different ways of thinking about the literature." She encourages questioning by students but also notes they need to know the etiquette to do it in a respectful way.

That kind of interaction is consistent with a trend in medical school away from students listening to someone speak in a large lecture hall and learning in smaller groups, reported Morgan Passiment, director of information resources outreach for the American Association of Medical Colleges. "You're seeing more of the flipped classroom model where the learner is driving what is being taught. In that case, you do see more engagement with whatever tool works. You do see students using every tool they have and reaching out to people who are not in the room to learn from each other."

Stanford Medical School, for one, is turning to online videos to teach some of the basics, reserving time with professors for more interactive sessions that students will find more interesting and will be more productive. They cite improvements in class attendance with this model, from 30% to 80%, according to a perspective piece in the May 2012 *New England Journal of Medicine* by Charles Prober, MD, senior associate dean for medical education for the medical school and Chip Heath, PhD, a professor of organizational behavior at the university's graduate business school.<sup>3</sup>

## PHYSICIANS BEING PULLED ONLINE

Dr. Vartabedian foresees a shift in the whole idea of who has status and influence in medicine. It will rely less on the letters after physicians' names, he argued, and more on their online activities such as content creation, curation, and conversation. "Reach, audience, and voice are the things that will determine influence," he argued. "We have an entirely new population of opinion leaders based on their online identities, content creation, and thinking."

He encourages physicians to take control of their online presence, given its inevitability, given the ubiquitous nature of Twitter and Web sites that allow patients to rate their physicians. "They can either participate in what's happening online and create their own footprint, or someone else will be more than happy to do it for them," he said.

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