Physician-initiated Research in Social Media

An Area That Can No Longer Be Ignored

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In this issue of *ATS Scholar*, Carroll and colleagues (1) analyze asthma-specific social media data to decipher the immense potential and pitfalls of this new educational medium. Indeed, social media use among various stakeholders in health care has skyrocketed (2). Depending on the discipline, the number of stakeholders entering into social media conversations has grown linearly, as in nephrology, or exponentially, as in oncology (3, 4). From physicians to trainees, patients to providers, a diversity of individuals and groups are turning to social media to communicate with, learn from, and educate one another (2, 5). By bringing together an increasingly diverse group of individuals and eliminating geographic, institutional, and/or temporal barriers to communication, social media communication is steadily competing with more traditional forms of medical communication (articles, letters to the editor, and perspectives). Many medical specialties are turning to Twitter, in particular, to conduct online journal clubs, Twitter chats, and learning-focused "tweetorials" (6).

With all new forms of medical education, and especially one as egalitarian as social media medical education, there needs to be careful study of how it can be used, misused, or abused to optimize its potential as a sustainable educational instrument.

Carroll and colleagues have done just that. The authors have built on the work in oncology, nephrology, and most recently cardiology to analyze microcommunities of learning on Twitter (3, 4, 7). Denoted by the hashtag ("#") and referred to as "sociomes," these communications between stakeholders in two asthma-specific microcommunities are analyzed by Carroll and colleagues. This research reveals how physicians, trainees, patients, and industry use their respective voices within these microcommunities to share information and engage with one another. By grouping stakeholders into one of four categories, the authors reveal that much of the online discussion was driven more by healthcare organizations than by patients or clinicians. The latter used the medium to its fullest by incorporating external citations (links) and multimedia into their tweets. As expected, patients within the sociome focused on learning, on providing helpful tips in managing asthma, and on one particular therapeutic agent (marijuana).

Such microcommunities are unique and have no real equivalent in the non-online (i.e., "real") world. In the real world, we seldom see a diverse group of stakeholders engage in real-time conversation with one another about a specific disease. That which is rare in the real world, however, is commonplace online and is elegantly

described and quantified by the authors. Though learning through social media may fill gaps that medical educators face, the authors identify a number of potential challenges and detriments.

The immediacy of social media can often lead to poorly formulated thoughts/opinions that may not be scientifically valid or evidence based. The conglomeration of a diverse group of stakeholders, all conversing with each other about a topic/disease, means that the various personal/institutional objectives that each brings to the microcommunity can conflict with one another (3, 4). The intrinsic structure of a tweet (280 characters or less) can challenge even the best educator to succinctly and accurately convey medical information to readers of various knowledge levels. Perhaps most important, physician-educators who conduct social media research must avoid using vanity metrics to measure relevant outcomes. Impressions and number of followers are easily calculated and produce large, eye-catching numbers but are often misunderstood and overestimate the effect being measured (3, 8). Not surprisingly, Carroll and colleagues reveal that industry accounts earned a disproportionally higher number of impressions while having the fewest number of users and tweets. Therefore, we must encourage investigators to employ well-tested social media metrics, such as the PageRank, reciprocated vertex pairs, and/or clustering coefficients, to correctly measure conversations, influence, and the flow of information between various healthcare stakeholders (3, 9–11).

With obvious benefits and hidden but real challenges, medical education on social media is ripe for rigorous investigation. Researchers need to identify how communication occurs within microcommunities and modify existing best practice guidelines to further enhance the benefits and mitigate the risks of social media use (3, 12). Carroll and colleagues lead the charge in this issue of *ATS Scholar*.

Social media–based medical education remains in its infancy. The research is nascent but growing and necessary to properly understand how social media can be used effectively with minimal risk to all those who participate. The research in this issue will add to our understanding of how best to use this new medium to educate learners of all education levels.

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REFERENCES

1. Carroll CL, Kaul V, Sala KA, Dangayach NS. Describing the digital footprints or "sociomes" of asthma for stakeholder groups on Twitter. *ATS Scholar* 2020;1:55–66.

2. Wetsman N. How Twitter is changing medical research. *Nat Med* 2020;26:11–13.

3. Desai T, Dhingra V, Shariff A, Shariff A, Lerma E, Singla P, *et al.* Quantifying the Twitter influence of third party commercial entities versus healthcare providers in thirteen medical conferences from 2011–2013. *PLoS One* 2016;11:e0162376.

4. Pemmaraju N, Thompson MA, Mesa RA, Desai T. Analysis of the use and impact of Twitter during American Society of Clinical Oncology annual meetings from 2011 to 2016: focus on advanced metrics and user trends. *J Oncol Pract* 2017;13:e623–e631.

5. Shariff AI, Fang X, Desai T. Using social media to create a professional network between physician-trainees and the American Society of Nephrology. *Adv Chronic Kidney Dis* 2013;20:357–363.

6. Chan TM, Dzara K, Dimeo SP, Bhalerao A, Maggio LA. Social media in knowledge translation and education for physicians and trainees: a scoping review. *Perspect Med Educ* [online ahead of print] 13 December 2019; DOI: 10.1007/s40037-019-00542-7.

7. Eliya Y, Pellegrini D, Gevaert A, Code J, Van Spall HGC. Social media in heart failure: a mixed methods systematic review. *Curr Cardiol Rev* [online ahead of print] 10 December 2019; DOI: 10.2174/1573403X15666191210143657.

8. Mackenzie G. Have we passed "peak tweeting" at medical conferences? (and other final reflections on social media analysis). #ScotPublicHealth [accessed 2019 Feb 5]. Available from: https://scotpublichealth.com/2019/02/05/have-we-passed-peak-tweeting-at-medical-conferences-and-other-final-reflections-on-social-media-analysis/.

9. Opsahl T, Panzarasa P. Clustering in weighted networks. *Soc Networks* 2009;31:155–163.

10. Smith MA, Rainie L, Shneiderman B, Himelboim I. Mapping Twitter topic networks: from polarized crowds to community clusters. Washington, DC: Pew Research Center [accessed 2014 Feb 20]. Available from: https://www.pewresearch.org/internet/2014/02/20/mapping-twitter-topic-networks-from-polarized-crowds-to-community-clusters/.

11. Ning Y, Muthiah S, Tandon R, Ramakrishnan N. Uncovering news-Twitter reciprocity via interaction patterns. Presented at the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM). 2015, Paris, France. pp. 1–8.

12. Desai T, Patwardhan M, Coore H. Factors that contribute to social media influence within an internal medicine Twitter learning community. *F1000Res* 2014;3:120.