

EDITORIAL COMMENT

A Perspective on the K-Index*



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The medical profession and, more broadly, the clinical care team depend on communication and learning to advance the well-being of the patients we serve. Critical components of communication include a robust critique and exploration of alternative study designs, analyses and interpretations of findings, and dissemination of those findings. The “old-fashioned” method of waiting for peer-reviewed journal articles to be published, attending in-person meetings, and listening to podcasts for discussion of a research project and its implications has merit, but in the absence of innovation, the agonizingly slow uptake of information will continue. The traditional approach has also limited discussion to experts or focused in-person events where experts interchange ideas with an audience. Social media, exemplified by Twitter, offers the possibility of democratizing both dissemination and critique, thereby bringing in the broad swath of the clinical practice and scientific community; this venue puts the lay person and the expert on the same playing field.

Twitter, like most major disruptive forces, is a 2-sided coin. The Twitter venue suffers from brevity and a dominance of “Twitterati”—people with a gift for promotion of their ideas by using short phrases. The uninformed or purposely misleading pundits can affect large numbers of people if they build a following on the venue.

The other side of the coin is that Twitter is an excellent way to communicate with clinicians and

researchers at a high level. Eric Topol, arguably the medical master of Twitter, uses the venue to communicate effectively, catalogue his reading, and chatter with colleagues about interesting topics. His 10-year anniversary advice on Twitter (1) represents the best use of the technology. By linking to full-length publications, he manages to combine the pithy phrase with the opportunity for in-depth exploration. Growing numbers of groups use similar methods to focus on key topics in depth, thus providing a venue for rapid exchange of views among those with a special interest.

However, although Twitter has more than 300 million users, it is not a way to communicate with all members of the public about science or clinical issues. Multiple channels will be needed to optimize the discussion of the interpretation of biomedical findings and their proper dissemination. For example, Google Search now receives more than 1 billion questions each day about health.

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Given the rapid growth of Twitter, it is not surprising that analysis of data related to its use would begin to develop. In this issue of *JACC: Case Reports*, Khan et al. (2) analyzed the relationship between the Impact Factor (IF) and Twitter followers, a ratio that has become known as the “Kardashian index,” or “K-index.” The concept of the K-index is to identify the relationship between following on the social media platform and the IF, assuming that the IF is directly related to scientific contribution. In an ideal world, scientists with the most important contribution of original knowledge would have the largest Twitter following. However, pundits with few publications with impact and a large Twitter following either may be expert commentators and analysts or may represent “crackpots” with little real knowledge of the topics on which they are commenting.

The K-index is an oblique way of addressing an issue that is bothersome to researchers who have paid the hard price of designing, conducting, analyzing,

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and publishing research. This effort can take many years and often yields disappointing results despite the research team's best efforts—the truth is often painful with respect to theories and beliefs. Another person who may have only casual knowledge of what is involved in the research may then make a comment that attracts enormous attention. People with a high K-index may be those who thrive by commenting on the work of others rather than doing their own work. Theodore Roosevelt wrote a speech known as “The Man in the Arena” that exemplifies the importance of doing rather than commenting “from the peanut gallery”:

“It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat” (3).

This concern about the high-K-index commentators is related to the much criticized comment by Longo and Drazen about “research parasites” (4). At a time when technology development far outpaces our ability to generate evidence about the benefits and risks of that technology, we need more people committed to participating in primary clinical

research. We will have to come to grips with the right balance of doing research versus interpreting and commenting on research. There is a need for both, but our hope is that we will develop a set of reciprocal expectations and that the community will learn the difference between commenters who understand the research and those who do not. Furthermore, as the gap between new technology and high-quality evidence on risks and benefits continues to expand, we need to encourage and reward those investigators who participate and generate evidence as a priority. If an assistant professor can advance by analyzing or commenting on others' research with more rapid publication and recognition opportunity, it may dissuade young clinicians and clinical investigators from participating in the research enterprise because of its much longer latency between work and work product.

The trajectory of Twitter as a means of scientific communication and clinical knowledge transmission will be interesting to watch. Twitter and other social media platforms are likely to continue to thrive and provide platforms that can be used by a growing number of cardiologists. We should hope for few Kardashian-style commentators and many more professionals who do the hard work and then use social media to develop a mutual understanding of what it means.

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REFERENCES

1. Eric Topol on Twitter. Available at: <https://twitter.com/erictopol/status/1147885195145572354?lang=ga>. Accessed January 9, 2020.
2. Khan MS, Shahadat A, Khan SU, et al. The Kardashian index of cardiologists: celebrities or experts? *J Am Coll Cardiol Case Rep* 2020;2:330-2.
3. Roosevelt T. Available at: <https://www.theodorerooseveltcenter.org/Blog/Item/The%20Man%20in%20the%20Arena>. Accessed January 2020.
4. Longo DL, Drazen JM. Data sharing. *N Engl J Med* 2016;374:276-7.

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