

Medical publishing in a digital world: new world, new standards?

Paul Schoenhagen¹, Lorraine E. Ferris², Margaret A. Winker³

¹Cleveland Clinic, Cleveland, Ohio, USA; ²Dalla Lana School of Public Health, University of Toronto, Toronto, Ontario, Canada; ³*PLOS Medicine*, USA
Corresponding to: Paul Schoenhagen, MD. Cleveland Clinic, Imaging Institute and Heart&Vascular Institute, 9500 Euclid Avenue, Cleveland, Ohio, 44195, USA. Email: schoenp1@ccf.org.



Submitted Aug 05, 2012. Accepted for publication Aug 31, 2012.

DOI: 10.3978/j.issn.2223-3652.2012.09.02

Scan to your mobile device or view this article at: <http://www.thecdt.org/article/view/1282>

Publishing standards of medical journals have evolved over decades and have been heavily influenced by the experience with print-based journals, which continue to be the gold standard for many aspects of medical publishing despite the increasing digitalization of all forms of communication (1,2). However, the entire publishing process (manuscript preparation, submission, review, revision, proofs, publishing) is now a digital one. This trend is also obvious in how journals are used. While some print journal copies may still be read cover-to-cover, most scientists and clinicians search online and read articles either in digital form (e.g., on computer screens, cell phones, or other mobile devices) or after printing a pdf or HTML version (3). While many of the highest-impact journals in cardiovascular medicine remain traditional print journals, it is therefore not surprising that these and other journals have developed and expanded their online presence.

It is likely that these rapid changes in publishing and utilization of medical literature eventually will bring changes in journal and publishing standards. While it is difficult to predict future developments, recent trends in our general media culture allow speculation about where digital format journals could take us in the time ahead. One potential area of change is the review process. It has been suggested that online discussion of an ‘ahead of print’ preliminary publication within a ‘social’ community of experts could supplement or replace traditional pre-publication peer review. Richard Smith, past editor of the *British Medical Journal*, has questioned the value of traditional peer-review, instead favoring post-publication peer-review (“the whole ‘market of ideas’, which has many participants and processes and moves like an economic market to determine the value of a paper”) (4). Viewing post-publication peer review as a replacement for pre-publication peer review,

Smith has emphasized that “the ‘marketplace of ideas’ decides whether they [scientific studies] are important and should lead to new practices and further research” (5). While most journals publish letters to the editor and many journals now post online comments from readers, the more formal concept of post-publication peer review has not been widely adopted. *Nature’s* 2006 experiment with post-publication peer-review (6) resulted in nearly half of the articles selected for post-publication peer review receiving no comments at all, and the editors concluded that “Feedback suggests that there is a marked reluctance among researchers to offer open comments.” This year, *PLOS Computational Biology* began publishing selected articles in 2 locations (7), the archival PubMed version available on its website (<http://www.ploscompbiol.org/article/info%3Adoi%2F10.1371%2Fjournal.pcbi.1002445>) and a version on Wikipedia (http://en.wikipedia.org/w/index.php?title=Circular_permutation_in_proteins). A number of revisions have been made to the Wikipedia document, but only time will tell whether it evolves along with the science.

Digital publishing platform journals may have broader potential in aiding filtering of the literature. Third parties (e.g., Journal Watch, ACP Journal Club, Faculty of 1,000) provide filtering of the literature for readers, usually for a subscription fee, but journals could provide this service to their readers directly. This may be particularly relevant for post-publication review platforms, where ‘drowning’ of the smaller number of novel, high-impact articles by a large number of lower-impact papers is a concern. Journals could devise mechanisms for readers to easily identify the “best” papers as evidenced by online pre-screening (e.g., editorial or advisory board) or post-publication review (article ratings by readers). The journal website could provide links to paper considered ‘best’ by experts and/or readers,

in addition to the usual displays of most cited and most downloaded.

Digital format journals may also find ways to incorporate the review process into the manuscript publication. Comments of a good reviewer often shape the final manuscript and have scientific value in and of themselves. Publication of these comments, equivalent to an editorial, may benefit the reader, authors, and reviewers at the same time. A transparent process may also eventually allow post-publication scientific evaluation of the quality of peer review. Ideas like these are already garnering attention in research communities, especially through bloggers, reader comments on journal sites and blogs, and social networks. The F1000 project (8) has already adopted post-publication review with the goal of providing “open science, open data, open peer review”. However, there is a question as to who will benefit most (9).

These trends are also leading to changes in how article impact is measured. Some journals are adopting article-based metrics as an alternative to citation-based impact factors, using the number of views/downloads of the article wherever it resides (the journal website, Mendeley, Zotero, etc), blog and social media traffic, and other measures, rather than the number of citations alone. COUNTER, the organization that standardizes article metrics for libraries to assess cost per article download, is developing a usage factor to standardize article usage measures (10). For such “altmetrics” (11) to succeed, academic institutions will eventually need to align how they capture and measure their faculty’s scholarly output within a changing digital environment.

In this publishing future, actual or perceived conflicts of interest, monetary and otherwise, will remain important. The relationship with sponsors and advertisers will need to be critically evaluated. There will also need to be clear and comprehensive conflict of interest declarations published with papers, including those associated with peer reviewers and readers who comment on articles, to ensure the transparency post-publication peer-review can offer is fully realized.

As exciting and challenging as these possibilities of digital media are, we need to be mindful that an overarching theme in medical publishing is improving research and patient care. Whatever medium is used for communicating and distributing (and reviewing) novel papers, it is essential that there is a validation process in the community of peers to ensure that scientifically sound and unbiased results reach those who use this

information for patient care. As journal and publishing standards evolve, and rapid changes occur in how papers are published, accessed, and read, we need to be mindful that technology should not drive us; journals, publishers, authors, reviewers and all other stakeholders need to think critically about where we want to be in the future and how we can use technology to reach these goals.

Acknowledgements

Disclosure: The authors declare no conflict of interest.

References

1. De Groote SL. Citation patterns of online and print journals in the digital age. *J Med Libr Assoc* 2008;96:362-9.
2. Topol E. *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care*. ISBN-10: 0465025501 ISBN-13: 978-0465025503.
3. Wallace S, Clark M, White J. ‘It’s on my iPhone’: attitudes to the use of mobile computing devices in medical education, a mixed-methods study. *BMJ Open* 2012;2. pii: e001099. doi: 10.1136/bmjopen-2012-001099. Print 2012.
4. Smith R. Screening for cardiovascular disease using age alone: reflections on a paper peer-reviewed as both “radical” and “unsurprising”. *J Med Screen* 2011;18:113-4.
5. Smith R. What is post-publication peer review? *BMJ Group blogs* 2011. Available online: <http://blogs/bmj.com/bmj/2011/04/06/richard-smith-what-is-post-publication-peer-review/>
6. Nature’s peer review trial. *Nature* (2006): doi:10.1038/nature05535. Available online: <http://www.nature.com/nature/peerreview/debate/nature05535.html>. Accessed 2012.
7. Wodak SJ, Mietchen D, Collings AM, et al. Topic Pages: PLoS Computational Biology Meets Wikipedia. *PLoS Comput Biol* 2012;8:e1002446.
8. Lawrence, Rebecca. F1000 Research: post publication peer review and data sharing. 2012. Available online: <http://wellcometrust.wordpress.com/2012/02/02/f1000-research-post-publication-peer-review-and-data-sharing/>
9. Crotty, D. Post-Publication Peer Review: What Value do Usage-Based Metrics Offer? *The Scholarly Kitchen*. 2012. Available online: <http://scholarlykitchen.sspnet.org/2012/04/19/post-publication-peer-review-what-value-do-usage-based-metrics-offer?>
10. Usage Factor: Usage-based measures of journal impact and quality. Available online: http://www.projectcounter.org/usage_factor.html. Accessed 2012.

11. Priem J, Taraboreilli D, Groth P, et al. Altmetrics: A Manifesto. October 26 2010. Available online: <http://>

altmetrics.org/manifesto/

Cite this article as: Schoenhagen P, Ferris LE, Winker MA. Medical publishing in a digital world: new world, new standards? *Cardiovasc Diagn Ther* 2012;2(4):258-260. DOI: 10.3978/j.issn.2223-3652.2012.09.02