

# Radiology Journals in Transition: A Summary of the 2013 Intersociety Committee Summer Conference

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## Abstract

The digital and online revolution is having a profound impact on radiology journals, forcing a migration from print to online publication and altering traditional revenue streams needed to sustain the journals. The 2013 Intersociety Committee Summer Conference attendees reviewed the history of the development of radiology journals, explored the forces driving the transition from print to electronic publication, and examined the impact of the alteration of the traditional revenue streams, such as subscription and advertisement dollars, on the financial sustainability of journals. The attendees also discussed the international movement toward open access to journal content and its impact on a journal's financial viability. Lastly, the committee explored the perceived value of radiology journals based on readership type: academic, private practice, or industry.

**Key Words:** Intersociety Committee, Intersociety Committee Summer Conference, ACR, journals, online, education, research, advertising

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Established by the ACR in 1979, the Intersociety Committee (ISC) is intended to promote collegiality within radiology, foster and encourage communication among national radiology organizations, and make recommendations on areas of concern. The ISC holds an annual summer conference, focused on a topic selected by an executive committee. The more than 50 professional radiology organizations that are members of the ISC include diagnostic and interventional radiology, radiation oncology, and radiological physics organizations.

The 35th ISC Summer Conference was held July 19-21, 2013, in Big Sky, Montana. The focus of the conference was to explore the current status and the future of radiology journals in the face of the digital and online revolution. To enrich the content of the meeting, Donald A.B. Lindberg, MD, Director of the National Library of Medicine; Glen P. Campbell, Executive Vice President of Elsevier, and Eric Silfen, Chief Medical Officer of Philips Healthcare, were included as guest speakers. In addition, 12 editors of

radiology, radiation oncology, and medical physics journals attended the meeting. Seventy-two members and executive directors from 36 organizations participated. As in previous years, the conference consisted of a series of plenary presentations, and workgroup sessions.

## HISTORY OF MEDICAL AND RADIOLOGY JOURNALS

The first scientific journal in the world is credited to the French, *Le Journal des Scavans*, first published in January 1665. Although only a 12-page quarterly that did not contain medical reports, it established the concept of the journal as a useful tool for communicating scientific information. Publication of the journal ceased in 1792 during the French Revolution [1]. *Philosophical Transactions of the Royal Society*, the first English scientific journal, was published 3 months after the first issue of *Le Journal des Scavans* [1]. It has the distinction of being the longest continually published purely scientific journal. It also established the concepts of scientific priority and peer review [2]. The first English medical journal was *Medicina Curiosa*, published in 1684, but it folded after 2 issues [3]. Although multiple medical journals were created over the next 100 years, the first US medical journal, *Medical Repository*, was first published in 1797 [1].

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Roentgen's discovery of x-rays was first reported in the December 1895 proceedings of the *Physical-Medical Society of Wurzburg* in an article entitled "On a New Kind of Rays" [4]. It took a scant 5 months for the first journal devoted to the study of x-rays, *Archives of Clinical Skiagraphy*, to be launched (London, May 1896). The name of this journal would later be changed to the *Archives of the Roentgen Ray* and then to the *British Journal of Radiology* [4].

The first American journal of radiology was the *American X-Ray Journal* founded by Heber Robarts in May 1897; however, it was sold, and became the *American Journal of Progressive Therapeutics*, which subsequently failed [4]. The oldest continuously published American journal of radiology started as *Transactions of the American Roentgen Ray Society* in 1902, was replaced by the *American Quarterly of Roentgenology* in 1906, and then replaced by the *American Journal of Roentgenology* (AJR Am J Roentgenol) in 1913. All versions served as the official journal of the ARRS [4]. The first real competition to AJR came from the journal of the Western Roentgen Society, the *Journal of Roentgenology*, which was published from 1917 to 1920 [3]. The name of this journal was changed to the *Journal of Radiology* when the Western Roentgen Society was renamed the RSNA, and changed again to *Radiology* in 1923 as the official journal of the RSNA.

Although AJR and *Radiology* were the main American journals of radiology for several decades, the number of journals started to proliferate with the development of each new imaging modality and corresponding subspecialty society in radiology. By 1994, 61 English-language radiology journals had been indexed in the National Library of Medicine [4]. One of the newest radiology publications was launched in 2004; the *Journal of the American College of Radiology* (JACR) focuses on the business and politics of radiology [5].

## A PARADIGM SHIFT FOR JOURNALS

For over 400 years, "print was king" in the dissemination of medical knowledge. The primary way to keep up with new medical developments was by reading paper-based medical textbooks and journals. However, in the 1990s, the Internet hit a tipping point that began to alter how information is accessed. When the Internet was fully commercialized in 1995, it started a rapid global change in information exchange [6]. This growth was fueled by an exponential increase in the number of computers online, from approximately 1 million in 1993 to 1 billion in 2013 [7]. The subsequent introduction in 1999 of mobile phones that could access the Internet further expanded its use to the point that by 2008, more people accessed the Internet via mobile phone than by personal computer [6].

This digital revolution is having a profound impact on medical journals, forcing a migration from print to online

journals and altering traditional revenue streams. A recent survey by the JACR revealed that although approximately 50% of readers prefer print, 22% prefer electronic distribution, and 17% like both [8]. The change to a digital format is complicated. In most instances, it is a stepwise migration that requires maintenance of both a print and digital journal, which obviously increases cost and complexity of the operation. Editorial staff must acquire new skills, or new staff must be hired. Although a journal could limit its digital product to a personal computer format, the increasing demand for tablet and smart phone formats is forcing diversity and increasing cost. There is also a demand for additional information over that typically included in print journals, including source data, high-resolution images, and interactive formats [8].

The alteration of traditional journal revenue streams by the digital migration has taken several forms. There is the increased cost of producing both print and electronic versions of a journal. Although it is recognized that a fully digital journal is less expensive to run, the cost saving is unlikely to be realized as long as a journal produces both print and digital versions. Advertising revenue has diminished for most journals owing to increased competition from a proliferation of new print and online journals, as well as a significant overall decrease in advertising in radiology journals as a whole [9]. Medical libraries are shifting to a digital environment, canceling paper journal subscriptions and limiting the number of online subscriptions they purchase.

Lastly, the international drive toward open access journals presents a major conundrum about how to meet this demand while remaining financially solvent. Complete open access disrupts the traditional subscription revenue stream and mandates a shift in publication expenses to societies, institutions, governments, or authors. Dove Medical Press, Ltd. is an example of an online open access publishing company in which most costs are borne by the authors. The company has 134 journals with over 15,000 published open access peer-reviewed papers [10]. Opponents to author-pay open access posit that it creates a financial incentive to accept more manuscripts with less emphasis on a solid peer-review process, ie, to publish more low-quality papers. An alternative to full open access that is commonly used by established print journals is an embargo on open access until 6-12 months after release of the print journal. This model theoretically preserves the subscription model while ultimately meeting the demand for open access, albeit delayed [11].

## ARE RADIOLOGY JOURNALS STILL RELEVANT?

In light of the new challenges confronting our journals, it is appropriate to ask, "Are journals still relevant?" The ISC attendees heard from 3 groups regarding the value of

radiology journals: academics, private practice radiologists, and employees and executives in imaging systems companies.

From an academic perspective, radiology journals serve multiple purposes. They are a vehicle for scholarly communication and education, they are a register of author's work, and through the peer-review process, they certify a level of quality. Peer-reviewed publications are one of the primary currencies of academia; they drive academic careers (promotion and reputation) and are a common requirement for significant grant funding. However, there is a concern that the academic "publish or perish" mandate has caused a marked increase in the number of lesser-quality submissions, which in turn has led to the creation of opportunistic journals and author-pay publications. For some authors, the need to publish has become more important than where their work is published [12].

Private practice radiologists look at radiology journals from a different perspective. Although they value radiology journals, they prefer educational journals (eg, *Radiographics*) and general radiology journals over subspecialty and science journals. As far as content, they prefer educational and how-to articles over science articles. Their use of journals (print or digital) as the "go-to source" for medical information has declined and been replaced by online searches, most commonly performed via Google. Although many private practice radiologists still desire print journals, the majority prefer an electronic format. As a group, they believe radiology journals could be improved by decreasing the number of journals, improving the quality of search engines, and providing links to referenced articles [13].

From the perspective of employees and senior executives in an imaging systems company, radiology journals are of value; however, use within this group differs from that of academic or private practice radiologists. They use journal articles to guide innovation, understand what their competitors are doing, follow the radiological landscape, identify key opinion leaders in the field, and assist with marketing and sales. Unlike private practice radiologists, corporate readers tend to prefer leading-edge science and technology papers over review articles, as these topics are more closely aligned with their business objectives. Their preferred journals tend to be more science and subspecialty based [14].

## CONFERENCE CONSENSUS

Based on the presentations and discussion during the conference, the committee members reached the following conclusions:

- Print is slowly dying, and publishing companies and users must embrace electronic publication.

- New advertisement revenue should be sought through adoption of new online advertising techniques.
- The drive to open access is highly disruptive to the traditional financial structure of medical journals and will necessitate the development of new financial models.
- Based on the growing preference to use search engines to find articles, a new low-cost, pay-per-paper charge method similar to the iTunes \$0.99 strategy should be pursued.
- The author pay-to-publish model is unpopular with the academic community, with most attendees favoring a user payment model.
- Some attendees believe that the "publish or perish" academic model is broken and is causing a proliferation of poor-quality papers and driving the increasing number of new online pay-to-publish journals.
- There is a strong need for better search engines to find good journal articles.
- If the subscription model is maintained and access requires a log-on, then there should be a method developed that would allow a single log-on to all journals to which an individual subscribes.
- Interactive content would be useful as long as it is used to enhance education and data analysis.
- There was broad consensus that PDFs should be adopted as the primary format for download and printing.
- The academic community strongly supports the development of a standardized format for manuscript submission for all journals.
- The committee believes that there are too many journals but recognizes that the proliferation is difficult to control.
- There was strong opinion that the academic community should teach residents how to perform a critical review of journal articles.
- All agreed that the impact factor is an imperfect measure of the quality of a manuscript and that other measures such as number of views or downloads of a article may be a better method of judging the value of a manuscript.
- Social media will likely enhance the dissemination of online articles and content.

## TAKE-HOME POINTS

- The migration of radiology journals from print to electronic formats is inevitable.
- The digital migration of journals is disruptive to the traditional subscription model of print journals and will require development of new financial models.
- Open access to articles presents a serious challenge to the traditional financial structure of radiology journals.

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