Electronic Submission of Academic Works: A Survey of Current Editorial Practices of Radiologic Journals

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Computers are nearly ubiquitous in academic medicine, and authors create and compile much of their work in the electronic environment, yet the process of manuscript submission often fails to utilize the advantages of electronic communication. The purpose of this report is to review the submission policies of major academic journals in the field of radiology and assess current editorial practices relating to electronic submission of academic works. The authors surveyed 16 radiologic journals that are indexed in the Index Medicus and available in our medical center library. They compared the manuscript submission policies of these journals as outlined in recent issues of the journals and the corresponding worldwide web sites. The authors compared the journals on the following criteria: web site access to instructions; electronic submission of text, both with regard to initial submission and final submission of the approved document; text hardcopy requirements; word processing software restrictions; electronic submission of figures; figure hardcopy requirements; figure file format restrictions; and electronic submission media. Although the trend seems to be toward electronic submission, there currently is no clear-cut standard of practice. Because all of the journals that accept electronic documents also require a hardcopy, many of the advantages gained through electronic submission are nullified. In addition, many publishers only utilize electronic documents after a manuscript has been accepted, thus utilizing the benefits of digital information in the printing process but not in the actual submission and peer-review process.

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KEY WORDS: digital images, electronic submission, editorial practices.

AS SOCIETY MOVES deeper into the so-called "information age," a struggle is mounting in academia between traditional paper-based media and newer electronic forms of scientific publishing.¹ Libraries at academic institutions that house paper journals are finding that their budgets are steadily shrinking, while the cost of subscriptions is steadily increasing.² Also, there is a growing desire worldwide for access to the information contained in various scientific journals.² The advent of the internet has revolutionized the possibilities for disseminating academic information, and many journals are now published electronically in addition to their paper forms. A corollary to this debate, and a logical outgrowth of electronic

publishing, is the question of how articles are submitted to journals in the first place.

Since the advent of the academic journal, authors have submitted the manuscripts and the illustrations for their articles to journals via traditional paper-based formats. In the past, this system was the most efficient by default—there were no other options. Now, however, advances in document and image publishing have made electronic submission of the entire manuscript feasible. Theoretically it should no longer be necessary for authors to dredge through the tedium and expense of typing their manuscripts on a word processor, converting them to paper for peer review only to have the paper versions redigitized by publishers before publication. Authors also should no longer need to spend the time and money to make glossy prints of each illustration, which are also redigitized before publication.

In 1995, Frank and Stern³ asked how close we were at that time to making digital manuscripts for peer review and publication the standard. Prompted by Frank and Stern and by our own experience with sending material to journals for review and publication, we undertook a study of the current state of electronic submission to radiologic journals. Specifically, we were interested in whether and in what form journals accepted electronic data.

MATERIALS AND METHODS

We reviewed the submission policies for 16 radiologic journals listed in the Index Medicus that were available at our medical center library. The policies were taken from the instructions to authors printed in recent issues (as of June 2000) and found on the journals' internet sites (as of July 2000). To reflect realistically the submission process, we did not contact the editors of the journals directly for special instructions. The

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electronic submission policies of each journal was compared using the following specific criteria: web site access to instructions, electronic submission of text, text hardcopy requirements, word processing software restrictions, electronic submission of figures, figure hardcopy requirements, figure file format restrictions, electronic submission media, and initial submission versus final submission requirements.

RESULTS

Of the 16 journals surveyed, only 2^{4,5} specifically mention electronic submission of the initial manuscript, one of which⁵ requires that the manuscript be sent in electronic form. Two other journals^{6,7} state that, "submission of electronic data is encouraged" but specifically discourage authors from submitting electronic manuscripts until after they have been accepted for publication. Two journals^{8,9} have implemented an "on-line only" version of their journals. Authors wishing to submit to these on-line only versions are required to send an electronic version of their text, but neither mentions electronic submission of the initial manuscript to their print journals.

Twelve of the journals⁶⁻¹⁷ either require or encourage authors to send the final accepted version of their manuscripts in electronic form. The 2 journals that mention electronic submission of the initial manuscript^{4,5} are not specific on whether they require the final document in electronic form. Two journals^{18,19} do not mention electronic submission of either the initial or final manuscript. All of the journals that accept either the initial or the final manuscript in electronic form require that a hard copy of the manuscript be sent in addition to the electronic version except one,⁴ which does not state whether a hard copy is required.

Five journals^{6,7,13,14,17} prefer that the electronic manuscripts be prepared using Word (Microsoft Corporation, Redmond, WA). Three journals^{8,9,11} prefer Word or WordPerfect (Corel Corporation, Ottawa, Ontario, Canada). One journal⁴ prefers that electronic manuscripts be sent in Adobe Acrobat (Adobe Systems Corporation, San Jose, CA) PDF files but will also accept files prepared with other software programs. Five journals^{5,10,12,15,16} did not specifically state software requirements. All of the journals that accept electronic manuscripts either in the initial or in the final form mention 3.5-inch floppy disk as a medium for electronic submission. Two journals^{6,7} allow electronic submission in a variety of ways including 3.5-inch floppy, file transfer protocol (FTP), e-mail, Zip disk (Iomega

Corporation, Roy, UT) CD, Syquest cartridge (Syquest Corporation, Los Gatos, CA), and optical disk. The 2 journals with on-line only versions^{8,9} require that the manuscripts be sent via FTP.

Eight^{4,8-11,13,14,17} of the journals surveyed accept electronic submission of images in connection with the initial submission of the document. Two journals^{6,7} "encourage" electronic data, but are unclear as to whether they accept it in connection with the initial document or only with the final accepted document. The two journals with on-line only versions^{8,9} both accept only electronic images. Except for these, none of the journals require that an electronic version of the images for the final accepted document be sent; however, all of them will accept electronic images with the final document. Six of the journals^{5,12,15,16,18,19} make no mention of electronic submission of images with either the initial or the final document. All of the journals that accept electronic images except one,⁴ and the on-line only journals,^{8,9} require that at least one hard copy of the images be sent with any electronic copies.

Four of the journals that accept electronic images⁸⁻¹¹ state that the images should be in tagged image file format (TIFF). Five journals^{6,7,13,14,17} specify either TIFF or encapsulated post script (EPS). One journal¹¹ specifies TIFF, EPS, joint photographic experts group (JPEG), or graphic interchange format (GIF). The on-line only journals specify GIF or JPEG.

None of the journals had specific image formatting software requirements beyond standard file formats. Three journals⁸⁻¹⁰ mention 3.5-inch floppy, Zip disk, or CD as acceptable submission media. Three journals^{13,14,17} specify 3.5-inch disk, Zip disk, CD, or Syquest cartridge. Two journals^{6,7} accept electronic images via FTP, e-mail, 3.5-inch disk, Zip disk, or optical disk.

DISCUSSION

The results of the study show that there is no definite standard for electronic submission of research papers to radiologic journals. Although the trend does seem to be toward electronic submission of manuscripts and images, it is interesting to note that every journal except one printed journal⁴ and the 2 on-line only journals^{8,9} still requires a hard copy in addition to the electronic copy of the paper. Clearly, if journals require a hard copy of the article, many of the potential advantages of

paperless manuscript preparation and submission are not fully realized. Authors and departments still have to take the time and spend the money to produce hard copies of their manuscripts and images.

Theoretically, electronic submission of manuscripts should not only be more convenient for the author, it should make the process more convenient for peer reviewers and publishers as well. Having the manuscript in electronic form should allow reviewers to make as many copies of the manuscript as they might need, or better yet, the article might be disseminated among reviewers via e-mail. Such a system could obviate the need for a printed version all together. Before the paper is published, it has to be digitized by the publisher anyway. Receiving manuscripts already in electronic form would save publishers the trouble of redigitizing the document before publication, thus eliminating unnecessary intermediate steps.

Most of the journals studied did not require an electronic version of the manuscript with the initial submission, but nearly all encouraged or required it for the final accepted version. Presumably, the reason publishers want an electronic copy of the final manuscript is because modern systems for page layout and prepress preparation are computer based and therefore require electronic files. By requiring the author to submit an electronic document, the publisher is saved from the trouble of redigitizing the data. In contrast, the editorial process for evaluating initial manuscripts for most of the journals is based on hardcopy printouts, even for text, which is almost universally generated by authors on computer-based word processors.

There also are significant potential advantages for authors who can submit electronic images. Glossy prints take time to produce and are expensive, and submitting the images in electronic form would offer time and cost savings. More and more radiology departments are using picture archive and communications systems (PACS) to view images directly from computer screens without the need for films. These systems can provide direct downloading of images in digital format for academic use, bypassing the need for hardcopy output for use in their research papers and lectures. Direct use of digital images not only saves time and money but also can yield higher quality images, even when the images are ultimately printed in hardcopy form.²⁰

Possible advantages for editors and publishers using digital image submission are less clear. Because image files usually are much larger than manuscript files, they are not transferred electronically as easily as manuscripts. Most journals that do accept digital images want them to be in either TIFF or EPS file format, which offer the best reproduction and representation of the image, but are often very large. Unfortunately, many image files are too large to be transferred efficiently via the internet. Current mass-storage removable media and writeable CD-ROM and DVD storage devices allow for submission of very large amounts of data, but this still requires the physical transfer of a medium and raises the issue of which media should be supported. Data compression, such as with JPEG, offers a partial solution, but such lossy compression techniques result in degradation of the original image. A newer file format called portable networks graphics (PNG) has alleviated many of the problems associated with image compression and shows promise as an emerging standard.²¹ With these types of new file formats, advantages from electronically submitted images will become more tangible for editors and publishers.

The two journals with "on-line only" versions of their printed product^{8,9} stand out because of the option that allows authors to submit to the on-line version of the journal. The journals offer instructions for authors on submitting to the web and have links to information and tutorials, as well information describing "how to write for the web." To submit, authors format their manuscript in HTML and send the information via FTP. Images are sent in either GIF or JPEG format. Because such articles are destined for on line publication, special presentation features unique to electronic media can be used, including digital video, audio, and web-based methods like Java applets. We note, however, that currently the majority of articles presented in these on-line journals consist primarily of electronic versions of their printed counterparts. Still, the method that is used for electronic submission promises to facilitate the development and dissemination of more specialized multimedia presentations.

Two other journals from one publisher^{6,7} also stand out because they accept final versions of articles submitted electronically and because they offer so many options for electronic submission.

The options for authors to submit via FTP or by e-mail (for small files only) are particularly useful because they allow authors to submit their entire document directly to the publisher's server. Such transfer methods remove the intermediate steps of saving to disk or other medium acceptable to the publisher, and then mailing the document—both steps that require extra time and money. These journals state that, "submission of electronic data is encouraged." However, both journals still require that a hard copy be sent for the initial submission and in addition to any data submitted electronically.

One journal⁴ also stands out in the area of electronic submission, with a pilot program to "expedite the peer-review process by routing manuscripts to reviewers via a secured electronic medium." The journal⁴ prefers that the entire document be sent together as a single Adobe Acrobat PDF file that contains both the text and the images, although authors who are unfamiliar with this software can

submit the manuscript electronically using more ubiquitous word processing programs. This journal does require that a hard copy of the document be sent in addition, however.

The results of the study show that there is no definitive standard for electronic submission of research papers to radiologic journals. As the discussion above illustrates, there is a definite trend toward electronic submission of manuscripts and images, as well an acknowledgement by the editors of these journals of the need to expand the role of digital media in the editorial process. However, paper still plays a role in the peer-review process. Not all members of editorial groups have uniform access to the systems required for an efficient electronic review process. Beyond this, however, our investigation found that paper is becoming obsolete as the publication process continues to embrace the full spectrum of technological efficiency afforded by digital media.

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