Averting the crisis in medical publishing – open access journals

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Scientific and medical publishing is in turmoil. The current system of distributing research papers in a vast number of journals, which are increasing in price, is unsustainable. Some subscription prices have increased by as much as 140% over 10 years leading to cries that publishers are restricting the communication of medical research. Little is being done by the big publishers to address the crisis in scholarly communication. However, a range of organisations and initiatives are trying to change things for the better. These include PubMed Central, the Public Library of Science, the Budapest Open Access Initiative and the Health InterNetwork Access to Research Initiative. In addition, the online publisher BioMed Central stands alone as the first commercial publisher to adopt a business model that aims to deliver open access publishing to the biological and medical research communities.

Scholarly publishing – a system in crisis

When scientists and clinicians submit papers they give away the fruits of their labour in order to advance scientific progress and to register their part in that advancement. Publishers undoubtedly add value to the research papers they receive by administering the process of peer review, editing and formatting the work. However, over the past few years, many publishers have substantially raised subscription prices for journals. This has coincided with a period of proliferation in the number of research papers published and the journals in which they are published, as researchers are encouraged to 'publish or perish'. Both these factors have created a situation commonly referred to as the 'serials crisis'; so-called because libraries can no longer afford to maintain the collections of journals to which they subscribe. The consequences of these financial constraints on the communication of scientific and medical information will ultimately lead to poorer health care as doctors are denied access to the most up-to-date medical information.

Access to research papers is also being hindered by the insistence of most publishers that authors give up the copyright of any research paper they want to publish. The upshot of this is that authors are unable to place their work on the Internet, preventing them from distributing their research findings. There is also criticism that journal publishing is slow and inefficient; manuscripts can often take over 6 months to be processed. In a fast-moving field of research, results can be out-of-date before they are even published.

Open access initiatives

These concerns have been addressed by a number of organisations and initiatives. In 1999, the National Institutes of Health in the US announced that it would provide a repository of full-text articles made freely available through the Internet. This service, known as PubMed Central <http://www.pubmedcentral.gov>, invited existing publishers to contribute by making original research papers available through the PubMed Central Web site. Unfortunately, few large publishers have contributed to PubMed Central, fearing that it will result in cancelled subscriptions and decreased profits. However, a few forward-thinking journals do provide their content, such as the *British Medical Journal*, the *Journal of the Institute of Physics* and BioMed Central's journals.

Following the reluctance of publishers to get involved in the PubMed Central initiative, the scientific community took matters into their own hands by forming an open access advocacy group known as The Public Library of Science (PLoS) <http://www.publiclibraryofscience.org>. Spearheaded by eminent life scientists, incensed by the failings of the larger traditional publishers, they created an open letter which has gathered around 30,000 signatories from 182 countries. The objective of the letter was to force the hand of publishers by insisting that a permanent, archival record of scientific research should belong to the public, and be freely available through an online public library. The signatories of this open letter pledged that 'beginning in September 2001, we will publish in, edit or review for, and personally subscribe to, only those scholarly and scientific journals that have agreed to grant unrestricted free distribution rights to any and all original research reports that they have published, through PubMed Central and similar online public resources, within 6 months of their initial publication date'.

When push came to shove, scientists were not willing to jeopardise their careers by boycotting high profile journals and the publishers were not willing to take up the challenge in fear that some institutions would cancel subscriptions. In a recent interview in *The Chronicle of Higher Education*, Mike Eisen,[1] one of the researchers behind the PLoS, admitted the boycott had been a failure. 'Perhaps we were being a little naïve...in retrospect, it was not an effective strategy.'

By the end of 2001, the philanthropist George Soros had got

involved in the open access debate with the creation of The Budapest Open Access Initiative (BOAI) <http://www.soros.org/openaccess/>. The initiative was backed by a US$3 million grant from the Open Society Institute <http://www.soros.org/osi.html> to accelerate the international effort to make research articles in all academic fields freely available on the Internet. Like the PLoS, the BOAI also takes the form of an open letter.

However, the BOAI encourages positive action rather than a boycott, calling on researchers to post their work on the Internet and to create alternative, freely accessible Web-based journals. It is early days for this initiative, but it seems to be putting its money to good use by offering grants toward the costs of setting up open access journals as well as providing funds for institutions in selected countries to use towards the cost of publishing in established open-access journals.

In January 2002, the World Health Organization announced the Health InterNetwork Access to Research Initiative (HINARI) <http://www.healthinternetwork.org>. The aim of this initiative is to provide free or greatly discounted online access to medical journals in resource-limited countries. The Web site contains content from more than 2000 biomedical journals in electronic form published by many of the world's biggest commercial publishers. Whilst supporters of open access welcomed this initiative, it has done little to address the serials crisis in the developing world, as access to HINARI is limited to 100 developing countries.

Delivering open access

If open access is to be achieved, researchers must have peer-reviewed, open access journals in which to publish. BioMed Central was launched in May 2000 with a view to providing the tools to deliver barrier-free, full-text access to peer-reviewed research papers. Barrier-free access provides two clear advantages over conventional journals. Firstly, papers published in open access journals have high visibility. Each article published in the 80 or so BioMed Central journals receives an average of 200 downloads per month. Second, the publisher does not require the transfer of copyright from authors so they can keep control of their work and ensure that it is placed on a publicly accessible server.

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Papers published in BioMed Central's journals are permanently and securely archived in PubMed Central as soon as they are published. They are also indexed in PubMed, BIOSIS and a number of other citation indexes, which makes them fully searchable. The innovative online submission, peer-review and publication processes have enabled the company to reduce the length of time from submission to publication to an average of 11 weeks.

BioMed Central is a commercial publisher and it funds open access through the payment of article-processing charges of US$500 per published article. However, waivers for this charge are available to authors from developing countries, and to those other authors who may not be able to pay. The company also runs an Institutional Membership Programme to take the pressure of paying the processing charge away from individual authors. Authors from institutions which become members of BioMed Central receive an automatic waiver of the processing charge each time they publish a paper with BioMed Central. The membership programme provides institutions with the means to give active support toopen access in scholarly publishing. To date, 55 institutions have become members, including Harvard University, Cancer Research UK and the World Health Organization. The cost of membership is based on the number of active researchers at an institution.

BioMed Central has also introduced a 'start a new journal' programme, which allows scientists to launch new journals in specialist areas, and provide the research content free of charge. Potential editors are required to provide a scope for the journal, assemble an editorial board, select a journal title and the publisher provides the publishing platform, a Web site and the technical expertise. To date, 24 editorial groups have set up their own open access journals with a further 26 to be launched in the coming months. New titles launched so far include *Malaria Journal*, *Current Controlled Trials in Cardiovascular Medicine* and *The Journal of Negative Results in Biomedicine.*

Conclusions

Initiatives like HINARI show that large-scale cooperation between publishers is possible. However, most commercial publishers are not yet ready to consider alternative publishing models, as was demonstrated by their attitudes to the launch of PubMed Central and the open letter issued by the PLoS. Despite all the initiatives, little has changed in the last 5 years. Time will tell if open access publishing is set to replace subscription-based models. Whether there is a revolution will depend entirely on the authors of the research articles and the custodians of their work (the librarians and information professionals responsible for paying for it). They are not powerless. If every researcher decided to publish their next article in an open access journal, such as those published by BioMed Central, it would force the large commercial publishers to re-evaluate their business models. Librarians too have an important part to play in making their users aware of the open access alternatives.

Reference

1 Young JR. Journal boycott over online access is a bust. *The Chronicle of Higher Education*, 16 May 2002. <http://chronicle.com/free/2002/05/2002051601t.htm> [Accessed 3/10/2002]