

Knowledgeshare

Web alert: opening up access to journal articles online

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Research information online: free and fee

Rather than relying solely on instinct, experience, advice and outdated training, professionals in the NHS are expected to base their decisions, where possible, on the best available evidence from systematic research. At the moment, much of the high-quality, pre-appraised research information, which is needed to support this model, is available via the internet to health workers in England without the need for passwords or payments. Either because they are provided free of charge, or because the NHS pays for access at a national level, resources such as the Cochrane Database of Systematic Reviews, national guidelines, and evidence digests including *Clinical Evidence* and *Bandolier* are all easily accessible online.

A well-conducted search for healthcare information should almost always start with these resources, but sadly, it will not often end with them. Such 'evidence-based' research is often time consuming to produce, and requires that sufficient primary research has been published from which to draw a conclusion. Consequently there are countless clinical and managerial questions that these resources cannot answer, making it necessary to consult the original journal literature. This is where we run into problems.

Although the Medline database of journal article abstracts is also freely available, via PubMed, the full texts of the journals it references are not. Although more and more publishers of periodicals are making electronic versions of their journal content available, these are almost always hidden behind password protection, and a subscription is necessary in order to gain access. Research-active universities tend to purchase electronic versions of most available journals, but as subscription rates rise (by more than 200% in the last ten years), many library services, particularly in the NHS, are finding themselves unable to find the funds for key publications.¹ Even where the NHS does

purchase a title, recent issues are often embargoed, and an Athens password is usually required for access, which some staff can find off-putting. (As an aside, it could hardly be easier for NHS staff to get an Athens password. Just go to www.athens.nhs.uk, click 'Self-registration' and fill in an online form to get access to many full-text journals and books as well as databases of images and abstracts.)

Following the research literature could be a lot easier and a lot less restricted, and many people believe that it will be, if the concept of open access publishing gains acceptance.

Open access publishing

Open access (OA) is a new model for scholarly publishing that may come to revolutionise the way that authors, publishers and readers relate to one another. In the current system most publishers make their money through reader subscriptions; they publish articles, and add value by ensuring peer review, proofreading, and recommending improvements, without charging the author. In return for this they receive permanent and exclusive rights to the content. Open access turns this idea on its head.

In order to publish in an open access journal, the author pays (out of their research budget). They pay the publisher for the costly peer-review process that adds considerable weight to their findings, they pay for the typesetting and proofreading, and they pay to maintain the website on which the journal is hosted. Among other things, this means that the publisher no longer retains control over the right to make and distribute copies of the article, and neither does the author. Articles from open access journals can be

copied and made available to anyone who wants to use them, for any purpose, so long as the author is attributed. And most importantly as far as the reader is concerned, there is no subscription fee. High-quality, peer-reviewed, current research can be downloaded from open access publishers without restriction.

The proposal of such a radical disruption of the publishing industry is, not surprisingly, causing rather a heated debate. The proponents argue that journal publishing is not just about generating money, but about distributing knowledge, and that medical knowledge should be available to everybody, not just to the privileged few who can afford the rising journal costs.² The publishers, perhaps concerned about a potential loss of profits, have made a number of arguments against the new model. Amongst other things, they raise concerns about whether researchers will be able to afford the cost of having their work published, and whether it is right that patients should have access to scholarly medical information without the skills to correctly interpret it. Their arguments have been convincingly debunked.³

For the reader of medical research, one of the most important issues surrounding open access will be whether or not OA articles carry the same weight as research published in the traditional academic press. It has been suggested that open access threatens scientific integrity because of a conflict of interest resulting from charging authors. However, the journal impact factors produced by the Institute of Scientific Information have put paid to these fears. The impact factors of OA journals, which give a measure of how often articles from a particular journal are being cited by other authors, compare well with equivalent subscription titles and are improving every year.⁴ In fact there is evidence to suggest that when articles are made open access it increases their impact factor, and the impact factor of the journal in which they are published.⁵

BioMed Central:

www.biomedcentral.com

BioMed Central (BMC) publishes over 140 open access journals covering all areas of biology and medicine. There are general journals such as *BMC Medicine* which publishes research articles and technical advances of special importance or general interest, and others covering more specific disease areas. Click on the 'Subject areas' link to browse the available journals, under headings such as 'Cancer', 'Cardiovascular', and 'Complementary and alternative medicine'. There is also content for staff working in different roles, including general practitioners, nurses and healthcare managers. All the original research is free to access and free to distribute, although some journals have additional content which does require a subscription. This

fee-based material includes commissioned reviews and commentaries.

Open access publishers such as BioMed Central are, in addition to making research more accessible, also making full use of web technology to enhance their content. Registering with the site allows users to search the full text of BMC journals, either using the 'Quick search' in the top-left corner, or clicking on 'Advanced search' to restrict by date or publication type or to combine search terms. You can also save searches and come back to them at a later date to see what else has been published. RSS feeds are available for those who wish to have new content fed directly to their news-reader (see my article in the December 2004 issue of this journal for more information on how to receive such updates).⁶ The site is interlinked with the PubMed database (www.ncbi.nlm.nih.gov/entrez), and allows the user to link directly to a set of related medical research abstracts or follow up references seamlessly. The Open Access model also allows more transparency as BMC is able to provide the pre-publication history for its articles, including the original submission and the reports from peer reviewers.

Other interesting facilities include the ability to view the most popular articles from the last 30 days, or since the launch of BioMed Central, and to download newly published articles to a handheld computer. Their site also includes a list of externally produced databases of biomedical information, which are mostly free to access and can be searched centrally. Plus, there are additional subscription-based resources available from BMC, like *Faculty of 1000* which comprehensively highlights and reviews the most interesting papers published in the academic literature, based on the recommendations of over 1000 leading researchers.

For authors who are considering where to submit their recent research articles, it is worth noting that NHS England is now an institutional member, and so staff in England can publish in any of the BMC journals without incurring the author's fee.

Public Library of Science:

www.plos.org

The Public Library of Science (PLOS) is an organisation that, like BioMed Central, aims to provide immediate unrestricted access to medical research. They are a not-for-profit group and the costs of publication are met partly through sponsorship and partly through payments from authors (although this fee is waived for authors with insufficient funds). *PLoS Biology* (<http://biology.plosjournals.org>) was launched in 2003, followed by *PLoS Medicine* (<http://medicine.plosjournals.org>) in 2004, and a number of more specialised titles in 2005.

PLoS Medicine is a multidisciplinary medical journal in which you will find case reports, epidemiology and clinical trials, as well as debates, reports from under-represented groups, and policy forums. There are also sections highlighting neglected diseases and looking at the translation of research into practice. As with BMC, content alerts are available via email or RSS, and whole issues are available to be downloaded to a PDA. It is also possible to see the ten most viewed articles of the last week. Users of the site can read the magazine section and the research section separately, and can browse past issues or search for keywords across the whole content. After reading a particular article you are able to send electronic responses, and read responses from fellow healthcare professionals.

Print copies of *PLoS Medicine* are also available, although there is a charge for this subscription.

PubMed Central:

www.pubmedcentral.nih.gov

PubMed Central (PMC) is not an open access publisher. PMC is a digital archive of journal articles on biomedical subjects that has been created by the US National Institutes of Health, and as such, it acts as a repository for much open access material. Articles from BMC journals as well as the Public Library of Science are automatically stored in PubMed Central and can be accessed here as easily as from their own sites. However, PMC is much larger than either of these resources and contains archives of articles from numerous other publishers.

All the content on PubMed Central is free, although not all is open access; obviously it is important to be clear about the status of any article you access from the site, as this will affect how free you are to make and distribute copies. Some of the non-OA journals choose to provide only certain categories of material on PMC, and some withhold material until a few months have passed since initial publication. As usual, the user can browse by journal title or search across all the journals at once, and it is this latter facility which makes the site particularly powerful, especially as more and more publishers make their material freely available.

Open Access News:

www.earlham.edu/~peters/fos/fosblog.html

This site is home to a blog created by Peter Suber, a policy strategist for open access, whose aim is to gather and disseminate news on the subject. He is supported by a wide range of contributors from across the open access movement, which makes this a fascinating resource for anyone interested in staying up to date with the latest progress in the area. At the time of writing,

recent postings looked at the boost OA is giving to cancer research, a new source of open access books, and a position statement from the Royal Society.

Unfortunately, the individual postings have not been organised into subjects or categories, which would make it easier to browse the site, however, there are a number of stand-alone pages which are worth exploring. There is an overview of open access, a page linking to past and forthcoming conferences and a timeline of the OA movement. The page of lists (www.earlham.edu/~peters/fos/lists.htm) is particularly useful as it can be used to locate additional repositories of open access material. BioMed Central and PLoS are not the only sources of OA articles online; institutions and individuals are also creating their own collections of free-to-access literature (originally published in non-OA journals) where the publishers allow. There are hundreds of these smaller repositories, and they can be tracked down using the list of 'open-access OAI-compliant archives'.

Conclusion

Making peer-reviewed research 'visible, accessible, harvestable, searchable and useable by any potential user with access to the Internet'⁷ is what open access is all about. The idea is to break down barriers so that progress can be shared rapidly around the medical community without disadvantaging the less well-resourced. This has the potential to greatly benefit society, but there is still a long way to go. Around 68% of non-OA publishers are currently allowing authors to self-archive their work in their own repositories, but the total amount of open access literature still amounts to less than 1% of published literature and many more OA journals are needed to shift the balance.^{7,8}

Healthcare staff who routinely search for the latest medical literature need to be aware of the open access movement, and should certainly find the increasingly hassle-free access to full text material refreshing.

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