ESSAYS

Open access, UK PubMed Central and the Wellcome Trust

Mark Walport[1] Robert Kiley[2]

J R Soc Med 2006;**99**:438–439

It is a fundamental part of the charitable mission of the Wellcome Trust—the UK's largest charitable foundation funding biomedical research—to ensure that the results of the work that we fund can be read and utilized by the widest possible audience.

At the present time, however, access to this research is not available to all the audiences we serve. Indeed, in a recent exercise that looked at articles in which the Wellcome Trust was attributed as a funder, we found that, at the time of publication, only 6% of these articles were freely available on the Internet. Though the situation for researchers (who have access to well-funded libraries) is far better, access is still a problem. Looking at the journal holdings of two leading UK universities we found that between 10% and 20% of the articles in this cohort were published in journals that these libraries did *not* have access to.

To address this problem the Wellcome Trust has modified its grant conditions, such that from October 2006 research papers partly or wholly funded by the Wellcome Trust must be made freely accessible via PubMed Central (PMC) (or UK PubMed Central once established) as soon as possible, and in any event no later than six months after publication.[1]

BENEFITS OF OPEN ACCESS

In addition to providing better access to Wellcome-funded research, open access provides a number of other benefits.

For researchers, it provides the opportunity for their work to be more easily read and cited. A recent study[2] that compared citation data for papers published either with open access or not, discovered ' . . . strong evidence that, even in a journal that is widely available in research libraries, OA articles are more immediately recognized and cited by peers than non-OA articles published in the same journal'.

Providing open access to the research literature also enables these outputs to be linked and integrated with other resources. It should be remembered that computers can also 'read' documents; already we are seeing how papers held in PubMed Central are programmatically linked to related resources, such as gene and chemical compound databases. Over the next few years—as data mining tools become more sophisticated—we will start to see new knowledge being created by the linking of research papers that hitherto had not been seen as relevant to each other. For this to happen, however, papers must be held in an open access repository and not remain hidden behind publishers' authentication systems.

Making research outputs freely accessible also helps funding bodies to evaluate the research they have funded. As already discussed, at the present time only about 6% of the research we fund is freely accessible. Though this figure increases to around 15% after 6 months following publication, any systematic analysis of the value of the research we fund using the web, is difficult and costly. Once all Wellcome-funded research is available in PMC (or UKPMC—see below) it will be possible to examine the effectiveness of our funding strategy and re-align it as appropriate.

Finally, by mandating our grantees to make all research outputs accessible through PMC/UKPMC, we are helping to ensure that the digital record of medicine can be preserved. All papers that are added to the PMC repository are marked-up to the journal archiving document type definition (DTD).[3] Mapping documents to this standard, non-proprietary format should ensure that future generations will be able to read these digital files, irrespective of developments to either hardware or software environments.

PAYING FOR OPEN ACCESS

Though the open access model provides the reader with free access to the literature, there are costs associated with this approach. For example, managing the peer-review process and copy editing the final manuscripts are value-added services that incur expenses.

To meet these costs the Trust will provide grant holders with additional funding to cover the costs of page processing charges, levied by publishers who support the open access model.

With costs coalescing around US$3000/£1600 per paper, we estimate that if every single paper the Trust was associated with was published under this model, the total cost would be around £6.4m—i.e., about 1.5% of our research spend.

[1]Director of the Wellcome Trust, [2]Head of e-stratgey, Wellcome Library, Wellcome Trust, London, UK

Correspondence to: Robert Kiley

E-mail: r.kiley@wellcome.ac.uk

It is also worth noting that the Trust is rarely the sole funder of a research team, and more than 80% of papers that acknowledge our support also acknowledge the support of one or more other funders. In time, as other funders recognize that publication costs are legitimate research costs, these costs will be spread throughout the research budget and, for the Trust, fall below the 1.5% figure estimated here.

UK PUBMED CENTRAL

To help realize its objectives the Trust is working with a number of other UK biomedical research funding bodies—including the Medical Research Council, the Department of Health, Cancer Research UK and the British Heart Foundation—to establish a UK version of PubMed Central (UKPMC).[4]

UKPMC will mirror the data held in PMC, as well as providing the infrastructure— specifically, an author manuscript submission and tracking system—to enable researchers to comply with the open access policies of their funders. Like its US counterpart, it will provide a stable, permanent, and free-to-access online digital archive of the full-text, peer-reviewed research publications.

A local (i.e. UK) version of PMC will also provide the opportunity to develop services that suit the needs of the UK, rather than the US, biomedical research community. For example, the system will be developed so that research papers will be linked to the grants of the UKPMC funders that supported the research, thus providing a valuable resource for evaluation. In addition, access and download data from UKPMC will provide a new form of impact measure that could potentially be used in evaluation and might feed into the research assessment exercise, particularly if this moves to a metrics-based assessment.

Other functional enhancements may include linking articles with other datasets, such as those developed and hosted by the European Bioinformatics Institute, and exploiting the new Web 2.0 technologies. By way of example UKPMC could provide social bookmarking services that allow users to 'tag' research papers, and share details of these papers with researchers who have similar interests.[5]

UKPMC also provides additional systems redundancy—it is always advisable to hold data in more than one location—and by taking responsibility for the curation of the UK biomedical research output, it means that the Trust and is partners are no longer wholly dependent (through the National Library of Medicine) on the US Government.

The UKPMC service will go live in January 2007.

CONCLUSION

In the past few weeks both the MRC[6] and the BBSRC[7] have made policy announcements that mandate their grantees to deposit their peer-reviewed papers in an OA repository. Similar initiatives are taking place at the NIH in the US,[8] as well as in Germany[9] and France.[10]

In the light of these developments it seems inevitable that within a relatively short space of time—certainly in less than 5 years—all new research papers will be freely available.

Making research outputs accessible to as many people as possible, for free, via the Internet, offers an important advance in the research process and will help scientists throughout the world make the discoveries we need to improve health.

Competing interests Both authors are employed by the Wellcome Trust.

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