

Submission to the House of Commons Science and Technology  
Committee's Inquiry into Scientific Publications

***How accessible is NHS-funded research to the  
general public and to the NHS's own researchers?***

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## **Summary**

1. We carried out a survey to estimate what proportion of articles resulting from NHS centrally funded research is accessible online (a) to the general public and (b) to NHS researchers at a particular location (Derbyshire Royal Infirmary and Derby City General Hospital).
2. Our results indicate that although the majority (90%) of the resulting research articles now exist in online full text form, less than a third (30%) of the online full texts are accessible to the general public immediately upon publication. Perhaps more surprisingly, despite the NHS's major recent program of electronic journal procurement, only 40% of the online full texts of these NHS-funded research articles are immediately accessible to NHS staff at the hospital we studied. These preliminary results suggest that the current system of scientific publishing is failing to make NHS research fully accessible to those who could benefit from it, including staff within the NHS.
3. **We recommend that the government works to improve the accessibility of the research that it funds by encouraging UK researchers to publish in Open Access journals.**

## Introduction

4. The first question posed by the Inquiry is:

*'What impact do publishers' current policies on pricing and provision of scientific journals, particularly "big deal schemes", have on libraries and the teaching and research communities they serve?'*

In order to evaluate how effectively the current system of scientific publication supports scientific communication within the NHS and the UK community at large, we undertook a survey of a sample of centrally funded NHS research projects. We investigated what proportion of the publications resulting from these projects are accessible online:

- to the UK population as a whole
- to NHS researchers.

This submission is a preliminary report on the results of the survey. We plan to publish a more extensive and detailed analysis in the near future.

## Methodology

5. The NHS maintains a database known as ReFeR (Research Findings electronic Register). ReFeR holds short summaries of the findings of all completed projects funded by the NHS R&D Programme and the Department of Health Policy Research Programme.

### ReFeR database

<http://www.doh.gov.uk/research/rd3/information/findings.htm>

6. Our survey covered all 128 projects listed in the ReFeR database for which the funding period ended during 2001. We chose to study the projects ending in 2001 as this allowed a 2-3 year window for the research that resulted from the project to have been submitted to a journal and published.
7. We emailed a questionnaire to the primary contact for each of the relevant projects in the ReFeR database on October 1<sup>st</sup> 2003, giving an initial deadline of November 1<sup>st</sup> for responses. The questionnaire asked the recipients to provide details of all published articles that had resulted directly from the specific project listed in the ReFeR database.
8. We sent a series of email reminders over the course of the next 2 months to those recipients who had not completed their survey forms. The collection of responses ceased on December 1<sup>st</sup> 2003.
9. In addition to published articles, we also asked the participants to list details of 'submitted', 'in press' and 'rejected' articles. The analysis below covers only the published articles, however. We also excluded from this analysis meeting abstracts, book chapters and other types of non-journal content so as to focus entirely on the issue of journal article accessibility.

## Results

### How many journal articles are published as a result of NHS centrally funded research?

10. We received responses from 108 (85%) of the 128 projects covered by the survey.
11. Collectively these projects had led to the publication of 206 journal articles at the time of questionnaire completion (Table 1).
12. For a breakdown of the journals in which articles were published, see Appendix 1.
13. A further 58 articles were described as 'submitted' or 'in press'. These articles are not included in the analysis below.

Projects covered by survey	128
Projects that responded	108
Response rate	84%
Total number of published articles reported	206
Number of distinct journals in which articles were published	107
Mean number of articles published per responding project	1.9

**Table 1**

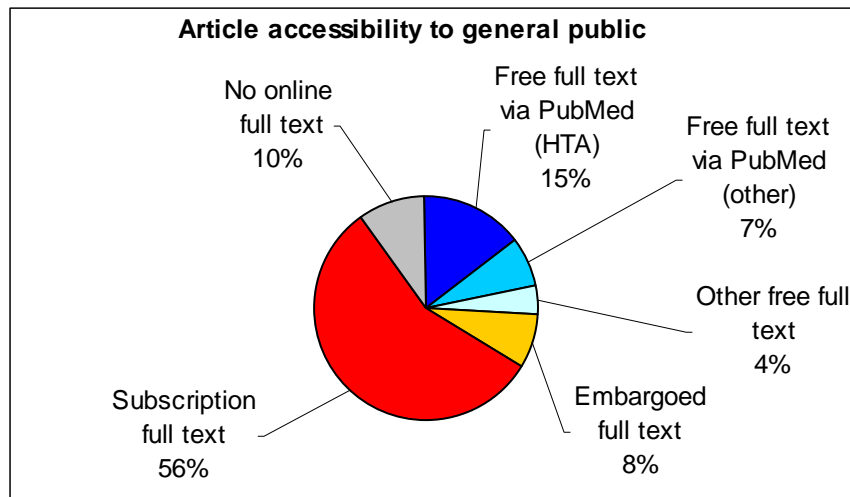
### How accessible is NHS research to the general public?

14. The first part of our analysis investigated what proportion of the research articles resulting from NHS-funded research, during the period of the study, were accessible online to the general public without requiring a subscription.
15. The results are shown in Figure 1. Although 186 articles (90%) had online full text available, the full text was only *freely* accessible immediately after publication for 54 articles (26% of the total number, 30% of those that are online). A further 16 articles (8% of the total) became available after an embargo period of between 6 and 24 months. The majority of articles, however, remain long term inaccessible to the general public.
16. It is noteworthy that more than half of the fully Open Access online full text articles (31 articles) were publications in the NHS's monograph series *Health Technology Assessment* (HTA). These articles are indexed in PubMed, and the PubMed record links directly to the free online full text. This publication provides an excellent example of how the results of NHS research can be published in a way that makes them generally accessible.

**Health Technology Assessment**  
<http://www.ncchta.org/index.htm>

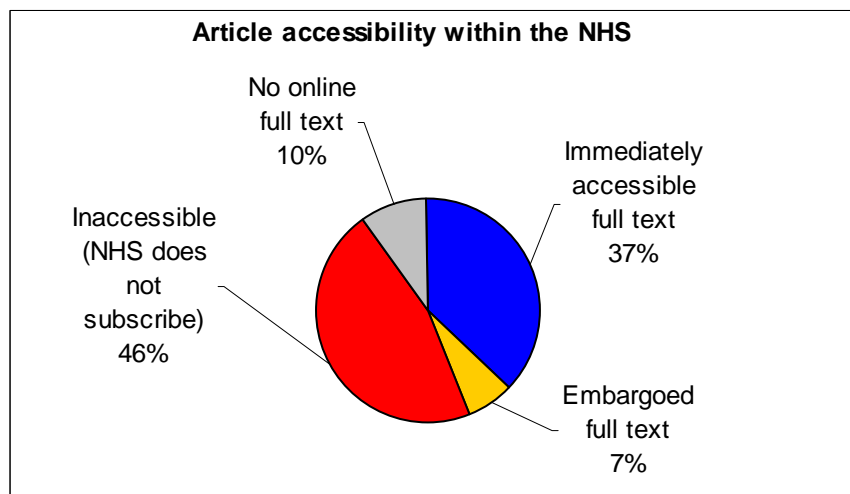
17. The next largest set of Open Access articles were those published in the *British Medical Journal* (11 articles). It is worth noting that the *BMJ* has indicated that it does not plan to retain its policy of full free online access beyond January 2005 (Tony Delamothe and Richard Smith, *BMJ*, 2003, 327: 241-242). It is still considering whether or not to retain free access to all research articles.

**BMJ article**  
<http://bmj.bmjournals.com/cgi/content/full/327/7409/241>



<i>Article accessibility</i>	<i>Number of articles</i>
Free full text via PubMed (HTA)	31
Free full text via PubMed (other)	14
Other free full text	9
Embargoed full text	16
Subscription full text	116
No online full text	20
<b>Total</b>	<b>206</b>

**Figure 1**



<i>Article accessibility</i>	<i>Number of articles</i>
Immediately accessible full text	76
Embargoed full text	14
Inaccessible (NHS does not subscribe)	96
No online full text	20
<b>Total</b>	<b>206</b>

**Figure 2**

### How accessible is NHS research to NHS researchers?

18. In the second part of our analysis, we examined the accessibility of the online full texts of these NHS-funded research articles to researchers within the NHS. For this initial study, we looked at one specific NHS location: Derbyshire Royal Infirmary and the Derby City General Hospital.
19. The NHS has three major tiers of online access provision:
  - National level**  
Electronic journals licensed by the Core Content project
  - Confederation level**  
Electronic journals licensed by the confederation
  - Local level**  
Electronic journals licensed by the individual NHS Trust
20. The NHS Core Content project provides access to more than more than 1000 journals, although in some cases this access is subject to an embargo period of either 6 months or 12 months.

#### **NHS Core Content project**

[http://www.sherpa.nhs.uk/Dbase/html\\_files/Database%20Registration.htm](http://www.sherpa.nhs.uk/Dbase/html_files/Database%20Registration.htm)

21. Derbyshire Royal Infirmary and the Derby City General Hospital belong to the Trent confederation, which holds a confederation-wide licence for electronic access to 29 journals published by the BMJ Publishing Group.
22. In addition, at the local level, Derbyshire Royal Infirmary and the Derby City General Hospital hold online subscriptions to 42 electronic journals (out of a total of 180 journal subscriptions held). Since the purpose of this study was to examine online accessibility, we did not include the print-only holdings when calculating accessibility figures. But it is worth noting that even had we done so, it would have made very little difference to the accessibility figures. Most of the articles that were inaccessible online were not covered by print holdings either.
23. Figure 2 shows the end result of these three tiers of online access provision. It indicates the proportion of the journal articles (reporting NHS-funded research) covered by this study that are accessible to staff at Derbyshire Royal Infirmary and the Derby City General Hospital.
24. Perhaps surprisingly, despite all the online access procurement efforts and expenditure of the NHS, the online accessibility of NHS-funded research to NHS staff at the location studied is only marginally better than the accessibility of those articles to the general public. Only 37% of the articles covered by the study are available to these staff immediately on publication (compared to a figure of 30% for the general public). A further 7% of the articles are accessible after a 6-12 month embargo period, leaving 56% long-term inaccessible online. Since 90% of all the articles *do* exist as online full texts, the major reason for this lack of access is subscription barriers.

25. Appendix 1 provides a journal-by-journal breakdown, indicating how many of the articles covered by this study appeared in each journal, and what the accessibility of that journal is for the general public and for NHS staff at the location covered by this study.

## Discussion

26. The web has changed the economics of scientific communication by making the incremental cost of distributing additional copies of research articles negligible, once the first copy has been published online.
27. It is therefore now feasible that research results should be openly accessible to anyone who has an interest in them. From the point of view of the investigator carrying out the research, and of the organization funding it, it is desirable that research publications should have the widest possible distribution.
28. Unfortunately, traditional scientific publishers have simply taken their existing business models, which derive from the completely different economic imperatives of print publishing and distribution, and transferred them to the online environment. The result is that access to the scientific literature online is subject to severe constraints, even though this is not economically necessary, nor in the interests of science.
29. The results reported in this survey indicate that there remains a significant gap between the *status quo* and a situation in which all research is broadly accessible to the general population online.
30. Even more striking is the limited online access that NHS staff have to the published results of the NHS's own research. Of course, due caution must be used in extrapolating from this initial study. The study only covered centrally funded NHS research, which constitutes a fairly small proportion of all the research that takes place within the NHS. Also, the initial phase of the study has only examined access at one location within the NHS. Further research is clearly necessary, but we have no reason to believe that the NHS location we studied was unusual or unrepresentative of the NHS as a whole. In particular, it is our understanding that across the NHS, the national Core Content collection is the major source of online subscription access rights. This report suggests that the Core Content collection still leaves a large fraction of the NHS's own research publications inaccessible online, to say nothing of the vast amount of research published by other organizations that also remains inaccessible.
31. Defenders of the scientific publishing *status quo* sometimes claim that researchers at major institutions effectively already have open access to all the research that they really need, thanks to institutional licensing deals. See, for example, Kate Worlock's interview with Elsevier Science & Technology division CEO Arie Jongejan, in "Open Access: A step back in time?" (*IMI Insights*, October 2003, pp. 5-7), where Jongejan disputes the fact that "traditional publishing models hinder access to content" and instead asserts that "70% of the audience which might be interested in accessing Elsevier's scientific, technical and medical content can at present do so". The results presented in the current report show that, from the NHS's perspective at least, this argument does not hold water.

Subscription-barriers *do* significantly limit the access of NHS researchers and staff to online research, even when that research has been funded and carried out by the NHS.

32. It might be argued that the availability of all NHS research (and other research) throughout the NHS is unnecessary, since as long as specialists and specialist departments subscribe to the particular journals they need, it might not be a major problem that this access is not available in all parts of the NHS. But the scientific literature is so large, the boundaries between disciplines are so fuzzy, and interdisciplinary research is so important that a specialist department still cannot possibly subscribe to all the journals that it needs. Even if it wanted to, publishers now primarily target their online offerings to large institutions and consortiums, so individual departments are forced to rely on print journals, rather than being able to take advantage of the instant availability, searchability and other benefits that online access provides.
33. Looking beyond the NHS, Jongejan's argument disregards the right of the general public to have access to the results of the latest medical research that their taxes have funded. The quality of debate in the country on controversial issues such as the MMR vaccine and BSE would greatly benefit from the accessibility to all concerned (not least science and health journalists) of the original peer-reviewed research articles themselves, rather than second- or third-hand journalistic interpretations. It is unjustifiably elitist to proclaim that none but those working at major well-funded institutions have the capacity to benefit from having access to the scientific literature.
34. The huge popularity with the general public of free sites such as PubMed, which indexes and makes freely available more than 11 million medical research abstracts, indicates that there is a strong demand amongst the general public for access to the latest medical research findings.

**PubMed**

<http://www.ncbi.nlm.nih.gov/PubMed/>

## Conclusions

35. It is clear that if the majority of NHS research is to be accessible to the general public, the scientific publishing industry will need to go through profound change. Although most of the research now being published *is* being made available online, it is trapped behind subscription barriers, and so one of the key benefits that online publishing can deliver for science (a near-zero marginal cost of distribution) is not being fully utilized. The current system of science publishing leaves the vast majority of full text research articles inaccessible to the majority of the population.
36. Online access to the research literature for the general public is desirable, but for medical professionals this access is essential. It makes little sense to spend vast sums on medical research, and then to surrender the fruits of that research to the control of a few large publishers who then restrict access. Doing so is an inefficient use of funding resources, since a lack of

access to previous research will act as a continuing impediment to further research.

37. Comparing Figures 1 and 2, it can be seen that despite significant expenditure by the NHS on online subscriptions, the online accessibility of the NHS's own research to NHS staff is currently only slightly better than the accessibility of that research to the general public. This situation needs to be addressed.

### **Recommendations for action**

- 38. We recommend that the government publicly expresses support for Open Access journals and initiatives, such as those listed at the Directory of Open Access Journals.**

**Directory of Open Access Journals**

<http://www.doaj.org/>

**Definition of Open Access**

<http://www.earlham.edu/~peters/fos/bethesda.htm#definition>

- 39. The NHS and the UK Research Councils should set out a policy to ensure that, when considering funding proposals and new scientific appointments, the quality of the applicant would be judged directly on the merit of the research that they have published. This policy would address the problem perceived by many scientists that the current system is skewed by reliance on "impact factors" and "journal reputation", which serve to disadvantage those who publish high quality research in new Open Access journals. These pioneers should be encouraged rather than penalized.**

### **Acknowledgements**

40. The survey was carried out in collaboration with Ron Stamp and Lesley Elliott at the Department of Health. Scott Gibbens, Richard Marriott and Caroline White provided details of NHS electronic subscriptions at the national, confederation and local levels respectively, and Camilla Macdonell provided assistance with collating survey responses.

## Appendix – Breakdown of online full text accessibility by journal

● = immediate access ○ = embargoed access ✕ = no access – = no full text available online

Public	NHS*	Journal title	Articles
✕	✕	Acta Psychiatrica Scandinavica	1
✕	○	Age and Ageing	1
✕	✕	Ageing and Mental Health	1
✕	✕	Ageing and Society	1
✕	✕	American Journal of Kidney Diseases	1
–	–	Annals of the Royal College of Surgeons of England	1
○	●	Archives of disease in childhood	1
✕	✕	Biomaterials	1
✕	✕	Brain Injury	5
○	○	British Dental Journal	2
✕	✕	British Journal of Clinical Governance	1
✕	✕	British Journal of Dermatology	2
✕	✕	British Journal of General Practice	5
✕	✕	British Journal of Medical Psychology	1
–	–	British Journal of Midwifery	1
✕	✕	British Journal of Psychiatry	5
✕	✕	British Journal of Surgery	2
●	●	British Medical Journal	11
○	○	Carcinogenesis	1
✕	✕	Child and Adolescent Mental Health	1
✕	✕	Clinical Medicine	1
✕	✕	Clinical Science	1
✕	✕	Cochrane Database Systematic Reviews	9
●	●	Community Care	1
–	–	Coronary Health Care	1
–	–	Critical Care Nursing Clinics of North America	1
✕	✕	Current Opinion in Psychiatry	1
–	–	Dementia Reviews	1
○	●	Diabetes Care	1
–	–	Drug Therapy Bulletin	1
✕	✕	Education for Primary Care	1
✕	✕	Emergency Medicine Journal	2
✕	✕	European Journal of Cancer Prevention	1
✕	✕	European Journal of Health Economics	1
✕	✕	Experimental Dermatology	1
–	–	Eye	1
○	○	Family Practice	2
✕	✕	Gastroenterology	1
✕	✕	Health & Social Care in the Community	1
✕	✕	Health Economics	2
✕	○	Health Education Research	3
–	–	Health Management	1
✕	✕	Health Policy	2
✕	✕	Health Services Journal	4
●	●	Health Technology Assessment	31
●	●	Healthcare Review Online	1
●	●	Hospital Pharmacist	2
✕	✕	Howard Journal of Criminal Justice	1

X	X	Injury	1
X	●	International Journal of Biochemistry & Cell Biology	1
X	X	International Journal of STD and AIDS	1
X	X	International Journal of Obesity	1
X	X	International Journal of Psychoanalysis	1
X	X	International Journal of Risk and Safety in Medicine	1
X	X	International Journal of Technology Assessment in Health Care	3
○	○	Investigative Ophthalmology & Visual Science	1
X	X	Journal of Hospital Infections	2
X	X	Journal of Advanced nursing	1
X	X	Journal of Clinical Nursing	1
●	●	Journal of Community Nursing	1
-	-	Journal of Design and Technology Education	1
X	X	Journal of Developmental and Behavioral Pediatrics	1
X	X	Journal of Endovascular Therapy	1
○	○	Journal of Experimental Medicine	1
X	X	Journal of Health Services Research & Policy	1
X	●	Journal of Interprofessional Care	1
X	X	Journal of Investigative Dermatology	5
X	●	Journal of Medical Genetics	2
X	X	Journal of Medical Virology	1
X	●	Journal of Mental Health	1
X	X	Journal of Mental Health Policy and Economics	1
○	●	Journal of Neurology, Neurosurgery and Psychiatry	2
X	X	Journal of Personality Disorders	1
-	-	Journal of Public Health Nutrition	1
X	X	Journal of Telemedicine and Telecare	6
X	●	Journal of Wound Care	1
X	●	Lancet	3
X	X	Medical Decision Making	1
X	X	Methods	1
X	X	Neurology	2
-	-	Nursing Times	1
-	-	Openmind	1
X	X	Ophthalmic and Physiological Optics	1
X	X	Oral Oncology	2
-	-	Pakistan Journal of Social Science	1
X	X	Photochemical Photobiological Sciences	1
X	●	Photochemistry and Photobiology	2
-	-	Practitioner	1
X	X	Primary Care Mental Health	1
-	-	Primary Care Report	2
X	X	Proceedings of the Nutrition Society	1
X	X	Progress in Retinal Eye Research	1
○	○	Psychiatric Bulletin	4
X	X	Psychological Medicine	1
X	●	Psychology and Psychotherapy	1
X	●	Public Health Reports	1
X	●	Quality & Safety in Health Care	1
X	●	Quality in Health Care	1
X	X	Quality of Life Research	1
X	●	Sexually Transmitted Infection	2
X	X	Social Psychiatry and Psychiatric Epidemiology	2
X	X	Sociology of Health & Illness	1

×	×	Spine	1
-	-	Stroke Review	1
-	-	Therapeutic Communities	2
○	●	Thorax	1
×	×	Vox Sanguinis	1
		Total	206

\* Derbyshire Royal Infirmary NHS Trust/Derby City General Hospital NHS Trust

Notes:

- i. *Journal of Medical Virology*: although the table above indicates that the NHS has online access to this journal, the specific article concerned is not available online as it precedes the commencement of full online publication by this journal. This article was therefore recorded as 'not available online' for the purposes of the analysis.
- ii. *Health Education Research*: Although most of the content of this journal is subscription only, one of the three articles in this study is freely available from the website. This article was therefore recorded as 'free' for the purposes of the analysis.