

Responsible participation can make these initiatives work. Academics should submit their relevant manuscripts to databases such as Relief Web. Moreover, we urge journals to submit the full text of all of their public health related articles to Relief Web, a policy which BioMed Central, an open access publisher, has pioneered, and has recently been joined by *PLoS Medicine*. The mass media could report more accurately on humanitarian situations. And funding agencies should look more favourably on evaluations of relief efforts and of the impact of their own responses.

We do not seek to place blame upon the many agencies and NGOs that provide selfless and important care to the most vulnerable people in humanitarian crises. We understand that our proposal may be viewed as a challenge, and we recognise that it is impossible to make all reports available, particularly those about relief in political disasters. In exceptional circumstances, publishing a report that seemed to be censorious of a host country could place an organisation's staff or the population in danger or risk the expulsion of the agency. Indeed the head of the Sudan mission of Médecins Sans Frontières (MSF) was arrested in May 2005 and detained for releasing a report reporting sexual violence observed at MSF clinics.<sup>10</sup>

We share a vision that everyone involved in making decisions about relief will be able to use evidence and knowledge generated by agencies and others. Archived evidence is a potent form of witness and testament for historical accountability and memory, and to achieve

such an archive we have to collaborate. It is only a matter of time before another disaster will find us in disarray.

Edward J Mills *fellow*

(millsej@mcmaster.ca)

Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, ON, Canada L8N 3Z5

Collaborating authors on this paper, which was conceived at the 2nd McMaster-Lancet Peace Through Health conference in May 2005, are: Janet Robinson, USA; Amir Attaran, Canada; Mike Clarke, UK; Sonal Singh, USA; Ross E Upshur, Canada; Kenneth J Herrmann Jr, Vietnam; Salim Yusuf, Canada. We thank Kumanan Wilson, Lexi Bambas, Charles Tauber, Anthony Zwi for suggestions or critical revision. EM is supported by the Ontario HIV Treatment Network.

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- 1 Chinnock P, Siegfried N, Clarke M. Is evidence-based medicine relevant to the developing world? *PLoS Med* 2005;2:e107.
- 2 International Federation of Red Cross and Red Crescent Societies. *World Disasters Report 2005. Focus on Information in Disasters*. Geneva: IFRC, 2005.
- 3 Robertson DW, Bedell R, Lavery JV, Upshur R. What kind of evidence do we need to justify humanitarian medical aid? *Lancet* 2002;360:330-3.
- 4 Banatvala N, Zwi AB. Conflict and health. Public health and humanitarian interventions: developing the evidence base. *BMJ* 2000;321:101-5.
- 5 Chalmers I. Government regulation is needed to prevent biased under-reporting of clinical trials. *BMJ* 2004;329:462.
- 6 Perera C. After the tsunami: legal implications of mass burials of unidentified victims in Sri Lanka. *PLoS Med* 2005;2:e185.
- 7 Sondorp E, Bornemisza O. Public health, emergencies and the humanitarian impulse. *Bull World Health Organ* 2005;83:163.
- 8 Rose S, Bisson J, Churchill R, Wessely S. Psychological debriefing for preventing post traumatic stress disorder (PTSD). *Cochrane Database Syst Rev* 2001(3):CD000560.
- 9 Tharyan P, Clarke M, Green S. How the Cochrane collaboration is responding to the Asian tsunami. *PLoS Med* 2005;2:e169.
- 10 Moszynski P. Sudan arrests aid worker for "crimes against the state." *BMJ* 2005;330:1350.

## How Islam changed medicine

### *Arab physicians and scholars laid the basis for medical practice in Europe*

Islamic civilisation once extended from India in the east to the Atlantic Ocean in the west. Buildings in Andalusia such as the Alhambra in Granada, the Mezquita in Cordoba, and the Giralda in Seville are reminders of the architectural imprint this civilisation left on western Europe. Less well remembered, however, is the impact of Islamic civilisation on Western science, technology, and medicine between the years 800 and 1450.<sup>1</sup> As was argued this month at the Royal Institution, today's Western world might look very different without the legacy of Muslim scholars in Baghdad, Cairo, Cordoba, and elsewhere.<sup>2</sup>

As Islam spread out of the Arabian Peninsula into Syria, Egypt, and Iran it met long established civilisations and centres of learning. Arab scholars translated philosophical and scientific works from Greek, Syriac (the language of eastern Christian scholars), Pahlavi (the scholarly language of pre-Islamic Iran), and Sanskrit into Arabic. The process of translation reached its peak with the establishment of the "House of Wisdom" (Bait-ul-Hikma) by the Abbasid Caliph Al-Mamun in Baghdad in 830. It made Arabic the most important scientific language of the world for many centuries and preserved knowledge that might otherwise have been lost forever.

As well as assimilating and disseminating the knowledge of other cultures, Arab scholars made

numerous important scientific and technological advances in mathematics, astronomy, chemistry, metallurgy, architecture, textiles, and agriculture. Techniques they developed—such as distillation, crystallisation, and the use of alcohol as an antiseptic—are still used.

Arab physicians and scholars also laid the basis for medical practice in Europe. Before the Islamic era, medical care was largely provided by priests in sanatoriums and annexes to temples. The main Arabian hospitals were centres of medical education and introduced many of the concepts and structures that we see in modern hospitals, such as separate wards for men and women, personal and institutional hygiene, medical records, and pharmacies.

Ibn Al-Nafis, a 13th century Arab physician, described the pulmonary circulation more than 300 years before William Harvey.<sup>3</sup> Surgeon Abu Al-Qasim Al-Zahrawi wrote the *Tasrif* which, translated into Latin, became the leading medical text in European universities during the later Middle Ages. Al-Zahrawi was also a noted pathologist, describing hydrocephalus and other congenital diseases as well as developing new surgical technologies such as catgut sutures.<sup>4,5</sup> Some describe Al-Razi (Rhazes), born in 865, as the greatest physician of the Islamic world. He wrote *Kitab Al-Mansuri* (*Liber Almansoris* in Latin), a 10 volume treatise on Greek medicine,<sup>6</sup> and also

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published on smallpox and measles: his texts continued to be reprinted well into the 19th century. The medical texts of Ibn Rushd (Averroes) were also widely used in European universities.

Ibn Sina (Avicenna) was known in the West as “the prince of physicians.” His synthesis of Islamic medicine, *al-Qanun fi'l tibb* (*The Canon of Medicine*), was the final authority on medical matters in Europe for several centuries. Although Ibn Sina made advances in pharmacology and in clinical practice, his greatest contribution was probably in the philosophy of medicine. He created a system of medicine that today we would call holistic and in which physical and psychological factors, drugs, and diet were combined in treating patients.<sup>7</sup>

Eventually, the Islamic civilisation constructed by the Arabs went into decline. In the east, new powers rose: first the Mongols, who in 1258 devastated Baghdad, the greatest Arab city of its day, and later the Ottoman Turks, who brought large parts of the Arab world into their new empire from the 14th century onwards. Weakened by internal strife and civil conflict, most of the Islamic cities of Spain had been conquered by Christian armies by the 14th century. The last Islamic state in Spain, Granada, surrendered to the Spanish in 1492 and its ruler, Boabdil, was exiled to North Africa.<sup>8</sup>

The flow of technology and ideas from the Islamic world to the West slowed and, in the past 600 years, has reversed. Academics and politicians still debate the reasons for and consequences of this decline in Islamic science and technology. The legacy of Islamic civilisation, though, remains with us in making possible Europe's own scientific and cultural renaissance.<sup>9</sup>

Azeem Majeed *professor of primary care*

(a.majeed@imperial.ac.uk)

Department of Primary Care and Social Medicine, Imperial College Faculty of Medicine, London W6 8RP

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- 1 HRH Prince of Wales. Islam and the West: speech at Oxford Centre for Islamic Studies, 1993. [www.princeofwales.gov.uk/speeches/religion\\_27101993.html](http://www.princeofwales.gov.uk/speeches/religion_27101993.html) (accessed 3 Dec 2005).
- 2 Drabu R, Nanji A, Greenfield S. Science and learning in Islam—a shared legacy. Royal Institution of Great Britain, London, 1 December 2005.
- 3 Soubani AO, Khan FA. *The discovery of the pulmonary circulation revisited*. [www.kfshrc.edu.sa/annals/152/mh9422ar.html](http://www.kfshrc.edu.sa/annals/152/mh9422ar.html) (accessed 3 Dec 2005).
- 4 Aschoff A, Kremer P, Hashemi B, Kunze S. The scientific history of hydrocephalus and its treatment *Neurosurg Rev* 1999;22:67-93.
- 5 Al-Hassani STS. *Thousand years of missing history*. Manchester: Foundation for Science, Technology and Civilisation, 2004.
- 6 Van Alphen J, Aris A. *Oriental medicine: an illustrated guide to the Asian arts of healing*. London: Serindia, 2003.
- 7 Wear A, Geyer-Kordesch J, French R. *Doctors and ethics: the historical setting of professional ethics*. Rodopi: Amsterdam, 1993.
- 8 Fletcher R. *Moorish Spain*. London: Phoenix, 2001.
- 9 Bulliet R. *The case for Islamo-Christian civilization*. Irvington, NY: Columbia University Press, 2004.

## How Google is changing medicine

*A medical portal is the logical next step*

What a remarkable year it has been for those of us monitoring changes in the global information landscape. Since last Christmas, there has been a flurry of activity: the digitisation of the world's libraries began in earnest (despite the copyright fracas); open access publishing gained much-needed support internationally (especially in science and medicine); and Google, MSN Search, and Yahoo introduced a number of customisation tools for desktops and mobiles, podcasts, blogs, and video searches.<sup>1 2</sup>

Google's influence and power is writ large in the search field—so large that librarians are asking themselves some difficult questions. With all of this technology and freely available digital information, what will happen to physical libraries? Google's mission is to provide access to the world's information—but this is librarians' mission too. Will they be needed in the new information age?<sup>3</sup>

For all the benefits technology provides, it does provoke anxiety. In a recent letter in the *New England Journal of Medicine*, a New York rheumatologist describes a scene at rounds where a professor asked the presenting fellow to explain how he arrived at his diagnosis.<sup>4</sup> Matter of factly, the reply came: “I entered the salient features into Google, and [the diagnosis] popped right up.” The attending doctor was taken aback by the Google diagnosis. “Are we physicians no longer needed? Is an observer who can accurately select the findings to be entered in a Google search all we need for a diagnosis to appear—as if by magic?” In a post-Google world, where evidence based

education is headed is anyone's guess.<sup>5</sup> Googling your diagnosis; Googling your treatment—where is all this leading us?

Google has won the battle of the search engines, at least for the time being (see example in table), and its more serious minded offspring, Google Scholar, is rapidly gaining ground. Within a year of its release Google Scholar has led more visitors to many biomedical journal websites than has PubMed (J Sack, personal communication, 2005). Once they discover it, many medical students and doctors prefer Google Scholar.<sup>6</sup> Although both tools benefit from Google's trademark simplicity, Google Scholar indexes more peer reviewed research and is especially quick in locating highly cited items and the proverbial needle in a haystack. Doctors are encouraged to consult Google Scholar for browsing and serendipitous discovery, not for literature reviews; and they should use the advanced search page to find words and names that occur often in the medical literature.

Which search engines bring visitors to bmj.com (November 2005)

Source	Number
Google	345 756
Google Scholar	105 185
Yahoo	57 967
PubMed (Medline)	14 522
PubMed Central	9 616
HighWire Portal	8 617
MSN	2 336