Medical education and practice in the information age

An exponential increase in the volume of recorded knowledge and continuing rapid development of the technology available for accessing it have become part of our way of life. In the medical context Tony Blair stated in 1998 that “the challenge for the NHS is to harness the information revolution and use it to benefit patients”. This poses a major challenge for hospital libraries, which until recently (with the exception of those in the university teaching hospitals) have lagged behind libraries in higher education in embracing and utilising the potential of the “new” IT. The imperative for developing access to electronic resources such as databases, electronic journals, and the internet has been reinforced by successive governments’ initiatives on modernising health care in the UK. The adoption of clinical governance, and the emphasis on evidence based medicine to provide better and more cost effective health care have in particular made access to the latest research even more vital. Information for Health, the NHS strategy paper stresses that “health care professionals need fast easy access to local and national knowledge bases that support the direct care of patients”.

This is perhaps self evident, as advances in clinical practice and research have led to a dramatic rise in the literature and the information explosion has become a self fulfilling prophecy. The sheer volume of information is both a valuable resource and a problem for both students and practitioners. It has been estimated that clinicians are now required to read 19 journal articles every day to keep up to date. At the same time clinicians are presented with the extra challenge of a more informed and less deferential population, less prepared to accept the “doctor knows best” attitudes of the past. It is now expected that clinicians are aware of every potential treatment and therapy that patients have discovered for themselves on the ubiquitous internet. So as well as being expert in their own field, clinicians are faced with the challenge of improving their knowledge management skills.

Traditionally keeping up to date with the literature involved browsing through selected favourite journals, which were subscribed to personally or by the local hospital, and searching Medline and other databases for specific clinical needs. In some instances this would be enhanced by current awareness services or selected dissemination of information to individuals by librarians. The development of “electronic” hospital libraries allows for more sophisticated methods. Databases such as Medline allow for personal research profiles to be set up and searched regularly, with the results delivered automatically to a desktop. Electronic journals are now a commonplace on the internet. These may be the direct electronic equivalent of print journals, or enhanced versions such as the BMJ that include not only the original text, but discussion of the articles through a rapid response function and an alerting service for new articles which cite earlier BMJ papers. It is now common for electronic journals to be searchable so that they can become “mini” databases. An increasing number of journals such as Bandolier, Evidence Based Medicine and Health Evidence Bulletins Wales, concentrate on evidence based medicine and these too are available electronically on the internet. Sources such as this have the great advantage for clinicians of providing the “meat” about evidence based health care in an easily digested form. Similarly the growth in electronic journal collections which are searchable means that current awareness profiles can be set up just as they can on bibliographic databases.

Electronic journals are of course only one element within the spectrum of information and data sources which comprise what is commonly now referred to as the “hybrid” library (in deference to the fact that libraries still contain much useful material in print format, as well as digitised information). In the university sector a series of nationally funded electronic library projects, collectively known as eLib, has over several years supplemented local developments to produce a culture in which the descriptor seems almost superfluous—all modern libraries provide access to electronic resources and are therefore “hybrid”, by definition. Within this emerging model of a hybrid library it is useful to identify four strands:

1 Subject specific materials, that is, a collection of resources (print, audiovisual, and electronic) expertly selected to be of particular relevance to the library’s clientele.

2 Collections of, or online access to, a broader range of contextual and background material, unlimited by subject, and including internet access.

3 Means of researching the existence and availability of all categories of source material (printed or digital, whether or not held locally), for example bibliographic databases, library catalogues.
(4) Support and training in information handling skills for users to enable them to use all of the above effectively, delivered either online or on site.

These elements essentially reflect the main features of the traditional library, translated into the digital environment. Subject specific materials include electronic journals and other documents accessible via the internet, as well as sources such as CD ROMS and items digitised locally (subject to copyright permission) and mounted on a local server. More wide ranging background materials are essential to support research, and the need for general internet access is commonly taken for granted—though it is important also to provide structured gateways to world wide web sources to enable effective use. A great deal of work is now being undertaken within the higher education sector to facilitate access and reduce time wasted “surfing” through development of the Resource Discovery Network. This includes gateways such as BIOME and OMNI which are of particular importance for medical and health service professionals. Work is also in progress on the feasibility of a national union catalogue (UKNUC) which will eventually simplify location of information held in libraries throughout the UK and facilitate resource sharing.

Development of the electronic or hybrid library addresses one of the long standing problems for clinicians—gaining quick access to the information they need regardless of which library holds the relevant source. Ideally 24 hour access to a well stocked library every day of the year is obviously desirable, but this has rarely if ever proved possible, certainly with expert staff on duty to assist. The advantage for clinicians of electronic libraries is that, finance and security and networking permitting, they can be accessed from any linked computer, from an office, from home, and from wards or surgeries or wherever required. In an ideal world the electronic library could truly provide the fast easy access to knowledge that Information for Health foresees. Of course the reality is never as straightforward as the ideal; there are difficulties in providing computers in the relevant settings, in supporting sufficiently reliable and robust networks, and above all in giving clinicians the knowledge of what is available and the confidence and competence to use information technology to their best advantage.

Hospital libraries face the same challenges as libraries in higher education both in giving the right information to the right person at the right time, and also in helping their users acquire the skills to become efficient and effective users of the resources at their disposal. The advent of the electronic library provides useful tools to progress the first of these objectives, but adds to the complexity of the second. The provision of online help and support for users is necessarily limited, as is the time which users themselves are able to commit to improving their own skills. One of the problems of the rapid adoption of information technology is that of providing adequate training, and getting users to recognise the need for this. Another is the widespread but mistaken belief that the new systems offer a relatively easy to use and foolproof route to a comprehensive universe of quality information. Teaching appropriate information handling skills, especially in relation to the evaluation of sources, is an increasingly important priority.

Although there are many similarities between the role of the electronic library in the university and the health sectors, there are of course some additional categories of personal and confidential information required in clinical practice. Providing effective access simultaneously to such sensitive data and to published material in a user friendly information environment poses obvious problems, with no obvious solution. The creation of the multifunction NHSnet as both a private network for the NHS, an intranet portal for communication and information and as an internet portal for health consumers, the public, pressure groups, other interested organisations, including higher education and research bodies, through the National Electronic Library for Health raises some difficult issues.

Firstly, and most importantly for clinicians and patients, is the issue of confidentiality of patient information and medical records. Since it was decided to create the Electronic Health Record and Electronic Patient Record as planned key components of integrated patient clinical care a secure network was essential. As a result of the Caldicott review’s recommendations on the safeguards to protect the confidentiality of personal information, the solution has been to create a two tier network with part open to all and the greater part restricted to the NHS.

Secondly, higher education institutions involved in the training of the NHS have to “run” two similar IT networks alongside each other: NHSnet for training health professionals and JANET (Joint Academic Network) for “non-NHS” programmes with strict firewalls between the two networks so there are no links between the two. This can result in staff and students having to access both networks for different parts of their study with all of the inconvenience, duplication of resources, and lack of the convenience and interconnectivity that are the principal advantages such communication networks normally allow. Conversely, because of the nature of the funding of health education, some universities involved in the education of health professionals are restricted to the JANET network only. This situation is particularly evident in the newer universities, and is our position in Derby.

At one time this split between the health and education sectors resulted in a related and serious problem for some hospital and other NHS libraries in financing subscriptions to key commercially produced electronic information services. As they were outside higher education consortia such as CHEST they were unable to benefit from the favourable discounted subscriptions to databases and electronic journal collections negotiated for the sector. Fortunately this has now been largely resolved by similar developments in the NHS sector such as MIRON (Medical Information Resource on NHSnet) and by medical libraries within some regions negotiating with suppliers as consortia.

Despite the fundamental changes in the information environment which have resulted from the proliferation of electronic sources and networks, the role of hospital libraries and librarians in the internet age is still basically the same as it always was. The essential criterion is still to find and supply the right information to the right person at the right time—although for medical libraries speed and accuracy has a potentially higher importance than in some other sectors, for obvious reasons. Is there a redefined role for medical librarians as knowledge managers or information brokers? The vast increase in the amount of information and the complexity of information sources is more than most clinicians, students, and members of the public can cope with. There is an urgent need to relearn search techniques and to acquire more sophisticated information handling skills. The plethora of information on the internet, much of it unorganised, unevaluated and potentially dangerous if improperly utilised, offers a training role for librarians to reskill both clinicians and patients.

There is then the potential to create fresh partnerships and alliances between clinicians and medical librarians (information scientists?) in providing clinical information—the evidence, not just in the library as has been traditional, but at the point of use—ward or community practice. Already in Oxford a small scale project has taken place with a librarian accompanying clinicians on their ward rounds, complete with “portable” databases to...
provide evidence based medical information. If this is to be the future, or even if clinicians search the databases themselves, there is a need to improve both their information gathering and evaluation skills—a role librarians have been fulfilling often without recognition for many years. It is a challenge to which hospital librarians with their expertise in managing information, and their awareness of their users’ needs, can and must rise.

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