toolbox

National electronic library for dentists

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An American University has been defined as a set of departments united only by complaints about car parking. The same could apply to the modern hospital. Even those who work within a hospital find it difficult to get to the library regularly during the working day but for those, like dentists or general practitioners, who work on their own premises, access to a library can present major logistical difficulties and it can take a couple of hours simply to drop in to the library. It is not surprising, therefore, that people who work in community services make little use of libraries within the NHS, and of course many dental practitioners do not work in the NHS (Table 1).

Table 1 The limitations of brick libraries

- Many healthcare professionals do not have access to a library or librarian.
- Those who do have access do not have much time to visit the library regularly during the working day: car parking is a major obstacle.
- Libraries are often locked at night. Even If people can visit the library in the evenings and at weekends they are unlikely to find the most valuable resource, the librarian.
- Most libraries have a limited set of journals and there are still libraries without the Cochrane Library.
- Investment in the NHS libraries is low and has not significantly increased in recent years although the demand for access to best current knowledge has increased.

Librarians are already adapting quickly to cope with the changes and for the future one can envisage a hybrid library service which links the electronic library with local libraries which will continue to play a very important part in the professional development of clinicians. This reflects the way in which the Web is developing as a complement to paper publishing and not as a replacement for it; if anyone is in any doubt about the future of the book in the Internet age, they only have to walk into a bookshop and see that the most rapidly expanding section of the bookshop is in fact the computer section.

The need and demand for easy access to best current knowledge is increasing, and clinical governance, as the concept implies, promotes high-quality care, with the definition of 'quality' being doing the right things to the right people at the right time and doing things right first time[1].

Le maladie du grand print-out

In addition to these external pressures on clinicians, there is another powerful pressure – the World Wide Web which is creating the knowledge revolution at the turn of the century. In the old days clinicians used to speak, rather disparagingly, about 'le maladie du petit papier', that is about the patient who brought a little bit of paper out of their pocket at the end of a consultation. Most clinicians are now familiar with what might be called 'le maladie du grand print-out' – the patient who presents with a Web print-out pages, or inches, thick. The World Wide Web gives amazing access to a very wide range of topics but it is unmanageable, ungovernable and uncontrollable. There is now good evidence that much of the information that is available is misleading, sometimes dangerously so.[2] It is true that the best evidence is available on the world Wide Web; for example, the abstracts of the Cochrane Library are up there; but these pearls can rarely be discerned in the flood and welter of pages that are downloaded when one types a common term into the search engine.

Coping with the knowledge revolution

One approach to coping with the knowledge revolution would be to expand our present knowledge services, but they have many weaknesses. The problems of reaching a library in the working day have already been described and, although it is true that one can get to the library more easily in the evenings and at weekends, the library's most valuable resource, the librarian, is rarely there at that time. What is needed is a new concept for knowledge services and the mission of the National electronic Library for Health is to create a new knowledge service for patients and clinicians, for managers and policy-makers (Table 2).

Table 2 The potential benefits of e-libraries

- The stock available is not limited by shelf space: small organisations can have as big an e-library as big organisations.
- Access is not limited to opening hours: many people like to read in the golden hours of learning, 9.30 to 11.30 pm, after young children are asleep and before the teenagers come in.
- The skills of librarians can be made more widely available.
- Knowledge can be provided where and when it is needed, in the consulting room or the accident department.
- Knowledge can be kept up to date quickly and easily.
- The methods used to produce the knowledge can be displayed easily and completely so that the reader can appraise the quality of the knowledge.

The National electronic Library for Health is part of the new Information for Health strategy and has to be seen in the context of the other important innovations in that strategy, for example the Electronic Patient Record. However, the most important element of the strategy is the principle that any investment in informatics should be for the benefit of clinicians and patients

and not simply for the benefit of managers – a dramatic, and very welcome, innovation.

The aims of the NeLH are to provide easy access to best current knowledge and know-how to improve health and healthcare, clinical practice and patient choice. The NeLH is based on the principles set out below.

- The overriding concern will be the **quality** of knowledge and not merely quantity.
- It will be equally open to **patients, clinicians and managers**.
- It will be available electronically **only**.
- It will contain **knowledge** and **know-how**.
- It will facilitate **action** and **interaction** as well as providing knowledge.
- It will **enhance** and build on existing libraries.

Operational definitions for each of these objectives is set out on the Web page. The NeLH has a virtual architecture shown in Figure 1.

The Atrium contains two types of help desk knowledge cafés, for single professional groups, and virtual branch libraries which focus on specific health issues, either:

- health problems such as cancer or oral disease, or
- population groups such as children or older people, or
- health improvement interventions such as screening, or

Table 3 The standards for ease of access

When knowledge is needed	How quickly
Speaking with a patient, e.g. in a consultation, or on a ward round	Within 15 seconds
Reflecting on a patient, e.g. over coffee when discussing a case with colleagues, when writing to a colleague	Within 2 minutes
During training or professional development	Within 1 week

- healthcare commissioning for primary care.

The Atrium leads on to three interlinked floors and the reader can always get from one floor to another with the search engine acting like a lift linking all the floors together.

The Knowledge Floor will contain knowledge of high quality. In the first instance the plan is to provide only knowledge that has had its quality assured and improved. There are a large number of problems with books and journals, summarised in Table 4 and Figure 2.

Thus the priority is to give access to knowledge where energy has been invested to improve quality, making explicit the methods that have been used; examples of this type of quality assured improved knowledge are the Cochrane Library and the new BMJ publication, Clinical Evidence. If there is nothing available in these sources of purified and distilled knowledge, then an approach at present would be to offer easy access to Medline. However,

Table 4 Five positive biases

Bias	Cause
Submission bias	Research workers are more strongly motivated to complete, and submit for publication, positive results
Publication bias	Editors are more likely to publish positive studies
Methodological bias	Methodological errors such as flawed randomisation produce positive biases
Abstracting bias	Abstracts emphasise positive results
Framing bias	Relative risk data produce a positive bias

Medline is huge and can be confusing. An alternative strategy being considered is that users of the National electronic Library for Health be offered access to journals of secondary publication. The RD Programme will advise on the contents of the Knowledge Floor.
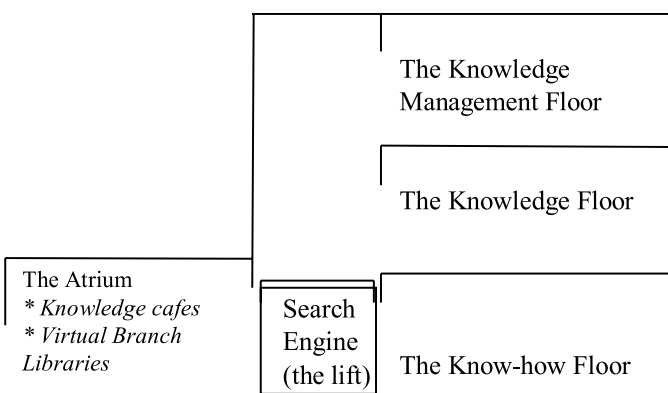
The Know-how Floor will contain not only guidelines but also everything that is needed to enable a programme, for example a screening programme, to work. The National Institute of Clinical Excellence (NICE) will advise on the contents of the Know-how Floor.

The Knowledge Management Floor will contain skills and resources for all those involved in knowledge management, namely those :

- producing knowledge – the researchers;
- using knowledge, e.g. clinicians who have to find and critically appraise knowledge;
- teachers of clinicians and managers to ensure that all clinicians are equipped for the knowledge century;
- librarians, to help them evolve to become comprehensive knowledge managers, skilled not only in librarianship but also in basic epidemiological principles;
- information specialists, to help them handle knowledge as well as data.
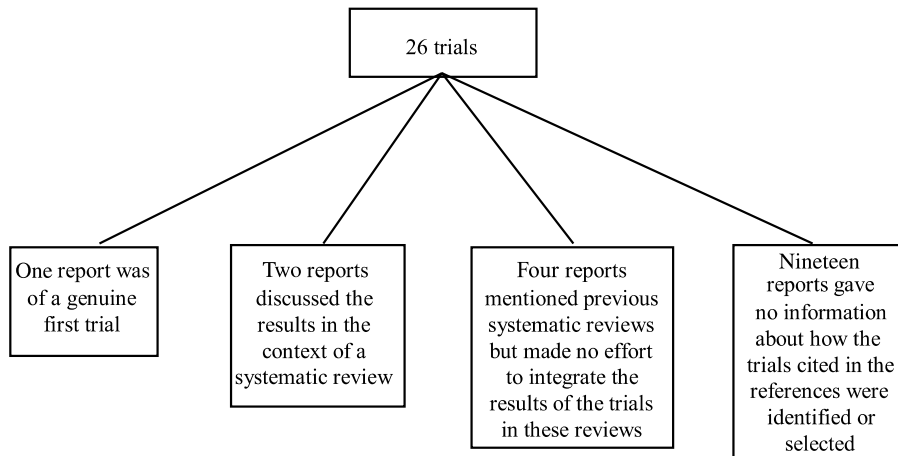
NHS Direct On-Line

The first phase of the National electronic Library for Health strategy first announced in *Information for Health* culminated in the opening of NHS Direct On-Line in December 1999. NHS Direct On-Line – www.nhsdirect.nhs.uk – complements the tele-

The Knowledge Management Floor

The Knowledge Floor

The Atrium
* *Knowledge cafes*
* *Virtual Branch Libraries*

Search Engine (the lift)

The Know-how Floor

Knowledge cafes for each speciality e.g. surgeons and nurses

Virtual branch libraries for health issue e.g. cancer and child health

Figure 1 Virtual architecture of NeLH

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                              │  26 trials  │
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| One report was of a genuine first trial | Two reports discussed the results in the context of a systematic review | Four reports mentioned previous systematic reviews but made no effort to integrate the results of the trials in these reviews | Nineteen reports gave no information about how the trials cited in the references were identified or selected |

Figure 2 Discussion sections in reports of controlled trials published in general medical journals: Islands in Search of Continents (from Clarke M and Chalmers I. JAMA 1998; 280:280–282)

Table 5 Knowledge trends

- Rapid growth in the amount of knowledge available
- Increased access for patients to knowledge via the World Wide Web
- Evidence that there are large amounts of poor quality information on the Web
- Growing evidence that even peer review does not produce primary publications that are accurate and unbiased
- Clear evidence that information on paper is often out of date, sometimes dangerously so
- The development of the systematic review as a means of providing quality improved and quality assured knowledge
- Electronic methods for knowledge production and dissemination allows the production and distribution of systematic reviews to be accelerated

phone advice service NHS Direct. The aim is to provide a definitive and credible source of information for patients so that the clinician and the patient can look at the one source of electronic information, for part of the problem of 'le maladie du grand printout' is that the clinician currently has to cope with Web print-outs of uncertain provenance.

The National electronic Library for Oral Health and Dentists

As part of the branch library programme, it is planned to have a National electronic Library for Oral Health. Our aim is to make this available to every clinician, and to every patient, because the NeLH will be intimately interlinked with NHS Direct On-Line, the new on-line source of information for patients and the public. Being on the Web will enable dentists worldwide to access the library. The NeLH Development Team looks to professional societies and Colleges to evolve into cyber societies dedicated to meeting the needs of their own members not only for paper but also electronically.

e-Dentistry

Evidence-based dentistry has made a major impact and created a need and demand for easy access to best current knowledge. It is clear now that the well informed patient will be a major driving force for change in the 21st century. The NeLH is designed to help clinicians meet this challenge and help with the creation of e-dentistry dentistry in the telecommunication age. A simple search of the World Wide Web found 68 579 hits for dentistry; paper overload has been replaced by electronic overload, but a National electronic Library for Oral Health and Dentists will help dentists cope with the knowledge revolution and make it much easier for them to base their practice on best current knowledge.

1. Antman EM, Lau J, Kupelnick B et al. A comparison of results of meta-analysis of randomized controlled trials and recommendations of clinical experts. JAMA 1992; 268: 240–248.
2. Impicciatore P, Pandolfini C, Casella N, Bonati M. Reliability of health information for the public on the world wide web: systematic survey of advice on managing fever in children at home. BMJ 1997; 314: 1875–1881.