

## Leading articles

# Accessing electronic information for clinical decisions

### The setting

It's early on a Friday evening, and you're working as registrar in A&E. A 6 year old girl is rushed in as an emergency, complaining of headache; she is febrile with convincing nuchal rigidity. Your colleague performs a lumbar puncture, then you attempt to achieve intravenous access, and by the time the anaesthetic cream has cooked the microbiologist rings from the lab. The CSF contains 50 polymorphs, two red cells and is "teeming with Gram positive diplococci".

### The question

Before you give an antibiotic though, you wonder about the steroids in meningitis debate. Should this girl get dexamethasone prior to antibiotics? Will it reduce her chance of hearing loss—or just increase her chance of continued infection? You reckon the five minutes it will take to draw up the antibiotic is enough time to try to find some information to help.

### The problem

In the setting of acute paediatrics, information needs to be delivered to those who provide care as quickly as possible. It has been suggested that immediate information should be accessible within 15 seconds, further information within three minutes, and a digest of some detail in around 10 minutes.<sup>1</sup> The only way this is possible is by utilising electronic information sources. Furthermore, the information should be "evidence based"; informed by the most valid clinical research available. Finally, the information needs to be applicable in the local setting, taking into account local services, populations, and peculiarities.<sup>2</sup>

Nearly all hospitals have an internal computer system, but these are primarily "datanets"—systems designed to transport laboratory data. Some systems are also "knowledge nets"—providing support for clinical decision making. The transition between a simple datanet to a knowledge net can be achieved by allowing computers to access the Internet—no mean feat for most hospital information management and technology departments.

Assuming there is access to electronic information resources, there is then a bewildering array of databases, knowledge banks, and repositories from which to choose. Within the proliferation, certain names stand out for their comprehensive nature, ease of use, or high quality of infor-

mation. Unfortunately, there is yet no location which can be said to harbour all three qualities. Table 1 highlights some strengths and weaknesses.

### The search

Back to the plot, though. In the setting of A&E, with access to a computer linked to the Internet, we can trawl through some databases to seek an answer. PIER, the Royal College of Paediatrics and Child Health sponsored collection of paediatric information at Sheffield, is a good example of a guideline repository.<sup>3</sup> When looking for information in a hurry, there is a good search engine with clear results. In the case of "meningitis", three guidelines are found: two describe steroids as useful only in HiB meningitis, the third implies dexamethasone is a standard part of the protocol. No guidelines reference their source material, nor state how they were collated (are they consensus statements? "evidence based" guides?).

The BMJ Publishing Group has a dedicated team writing and updating biannually *Clinical evidence*.<sup>4</sup> This is a book, also available via the Internet, which aims to provide succinct summaries of high quality evidence relating to the treatment of common conditions. It is aimed at a very general audience, and currently contains few chapters relating to acute paediatrics. If, as the registrar in A&E, you could remember your password, there would be no information of relevance to your current plight.

With time running out, another option may be to use a portal which accesses multiple information sources: you type in a question, and the portal looks up the answer on a number of different databases. "SumSearch" from the University of Texas in San Antonio,<sup>5</sup> or Ovid's "Evidence Based Medicine Reviews"<sup>6</sup> are such products. SumSearch allows a single search request to access a myriad of databases: a textbook of medicine, the abstracts of the Cochrane Collaboration reviews, full text of the "DARE" review collection, and even focused searches of Medline. It is freely available over the Internet, and although a little slow at peak times, provides high quality answers quickly. In response to "pneumococcal meningitis and dexamethasone", SumSearch tidied up the search and provided links to a systematic review and meta-analysis. Similar information may soon be available within the NHS from the National Electronic Library of Health.<sup>7</sup>

Evidence Based Medicine Reviews from Ovid<sup>6</sup> performs a similar task, with the addition of full text Cochrane and

Table 1 Strengths and weaknesses of electronic information resources

Source	Payment	Strengths	Weakness
PubMed "Clinical Queries" www.ncbi.nlm.nih.gov/PubMed/clinical.html	Free	Easy access, useful filter of extraneous information, very comprehensive	No quality filter, authors' abstracts
DARE agatha.york.ac.uk/welcome.htm	Free	Structured independent abstracts, easy access, broad coverage	Difficult for clinical practice
Cochrane Collaboration www.update-software.com/cochrane/cochrane-frame.html	Subscription (access via many health information providers available free)	Authoritative collection of information, quality assured	Narrow coverage, too detailed for clinical use
Best Evidence www.ovid.com/products/cip/ebmr.cfm	Subscription	Quality assured, clinical commentaries provided	Narrow coverage, difficult to access
Clinical evidence www.evidence.org	Subscription	Easily readable, useful clinical summaries	Very narrow coverage

Table 2 Sites which collate critically appraised summaries (CATs)

Source	Notes
www.bestbets.org	UK collection of A&E summaries ("Best Evidence Topics", BETs)
www.pedsccm.org	US collection of paediatric critical care CATs
depts.washington.edu/pedebm/	US collection of exclusively paediatric CATs
www.ped.med.umich.edu/ebm/cat.htm	US collection of exclusively paediatric CATs
www.urmc.rochester.edu/medicine/res/CATS/index.html	US collection of paediatric and internal medicine CATs

searching Best Evidence too, but is a subscription access product. The search "pneumococcal meningitis and dexamethasone" provides a reference to the same review, but in a predigested format with clinical commentary attached (from Best Evidence).

### The future

It is unrealistic to look for answers in clinical time in anything but these "preprocessed" formats. As hinted above, there are a selection of databases which back up the process—Cochrane, DARE, Best Evidence—and there are new projects developing such resources.

These developing knowledge banks contain easily digested summaries of the evidence, with the facility for more detailed investigation if time allows. The format used in many centres practising evidence based child health is the "critically appraised topic" (CAT). This is in effect a highly structured abstract, written independently, with commentaries on both methodological and clinical issues.

Evidence Based On Call (EBOC),<sup>8</sup> a team from the Centre of Evidence Based Medicine (Oxford), has produced such a resource for general medicine, and is working on expanding this into paediatric practice. These CATs are independently verified by two researchers and reviewed by a clinician working in the appropriate field. There are also a number of sites in the USA and UK which have begun to collate such summaries (see table 2). Many

of these sites incorporate mechanisms by which practising clinicians can contribute to the emerging wealth of knowledge.<sup>9</sup>

### The answer

The abstracted version of the meta-analysis convinces you to give intravenous dexamethasone with the antibiotic. The child is confirmed to have pneumococcal meningitis (penicillin sensitive) by microbiological testing, and is discharged home a fortnight later. There is an appointment with the local audiologist coming up—but no hearing test as yet.

R S PHILLIPS

Centre for Evidence Based Medicine,  
John Radcliffe Hospital,  
Oxford OX3 9DU, UK  
bob.phillips@doctors.org.uk

- 1 <http://www.nelh.nhs.uk/background/knowledge.asp> (accessed 26/7/00).
- 2 Sackett DL, Straus SE, Richardson WS, Rosenberg W, Haynes RB. Chapter 7, Guidelines. In: *Evidence-based medicine: how to practise and teach EBM*, 2nd edn. Edinburgh: Churchill Livingstone, 2000.
- 3 <http://www.pier.shef.ac.uk> (accessed 26/7/00).
- 4 <http://www.evidence.org> (accessed 26/7/00).
- 5 <http://sumsearch.uthscsa.edu/searchform45.htm> (accessed 26/7/00).
- 6 <http://www.ovid.com/products/cip/ebmr.cfm> (accessed 26/7/00).
- 7 Muir Gray JA, de Lusignan S. National electronic Library for Health (NeLH). *BMJ* 1999;**319**:1476–9.
- 8 <http://www.eboncall.co.uk> (accessed 26/7/00).
- 9 Dawes M, Godwin M. Global medical knowledge database is proposed. *BMJ* 2000;**320**:1340.

## STAMPS IN PAEDIATRICS

### Hospitals and clinics

Most of the stamps with a paediatric or health interest are commemorative issues—that is, stamps which are released to mark a particular event and available for a short period of time (usually only months). Definitive stamps are stamps used routinely for postage and are available for long periods of time (often years) without design alteration. It is unusual to find a definitive stamp with a health interest. The 1/2d Bahamas stamp is one such example and shows the infant welfare clinic. This formed part of the island's definitive sets from 1948 to 1965. Originally issued in 1948 with the portrait of King George VI, it was the first value in the definitive set of 16 covering the cost of postage from 1/2d to £1. The design was changed in 1954 to the portrait of Queen Elizabeth II. The stamp appeared a third time



in 1964 when this definitive set was overprinted "New Constitution 1964" as illustrated here. The new definitives subsequently issued in 1965 did not include the infant welfare clinic.

M K DAVIES  
A J MAYNE