



Decision support:

One important facet of technology enabled learning

By Kendall Ho, MD, FRCPC

Many physicians assert that while they like attending conferences and workshops to help keep them current in their medical knowledge, many do much of their professional learning on the job.

It is clear that, while formal CME activities, such as conferences and hospital rounds, are time-honoured and familiar ways for physicians to fulfil some of their learning needs, CME providers should also understand the characteristics of “learning on the job”—a powerful avenue for knowledge and skills acquisition.

“Learning on the job” requires, at least, the following three essential elements:

1. A context for learning: the patient with his/her medical condition;
2. The knowledge needed to manage the case:

including books, evidence-based clinical practice guidelines, and journal papers; and

3. An expert or a coach’s perspective: the specialist or an opinion leader to help put knowledge into practice.

It is through the triangulation of the three elements that vivifies “learning on the job.” One could further argue that the availability of information and perspective at that critical time when the physician needs to make diagnostic or management choices, or the concept of “just-in-time information on-demand for decision support,” is what makes “learning on the job” a powerful learning experience.

More and more physicians are turning to information and communication technologies, such as computer, the Internet, personal digital assistants (PDAs), and other electronic devices, to assist them in their professional learning and practices. Perhaps the two most distinctive characteristics that make these technology-enabled learning strategies particularly useful in decision support are their ability to provide just-in-

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time information on demand, and the convenience of automatic archiving of transactions for later audit, and data-mining.

For example, the Internet offers a vast resource of medical textbooks, Web sites, MEDLINE, and other databases for quick clinical answers. Drug databases housed in a PDA, such as Palm Pilots or pocket personal computers can, within seconds, readily determine drug interactions of a large number of medications for a particular patient. Clinical practice guidelines, essential calculations, such as creatinine clearance or body mass index, can be rapidly made through PDA-based medical calculators. Electronic health records (EHR) used in hospitals and physicians' offices not only help in charting and documenting management transactions, but also in providing a rich database for practice audits and review for continuing quality assurance. EHR eliminates the tedium of the labour intensive manual pulling of medical charts and meticulous reading of handwritten information for coding and analysis.

Physician learners will benefit from decision support tools in their professional development, and the application of these tools will lead to teachable moments and transformational continuing professional development opportunities. In the meantime, CME providers should take advantage of technology-enabled learning strategies to create decision support tools to help physicians in their practice and to assist them to learn while they practice.

I would welcome further contributions from readers as to the types of technology-enabled decision support tools they have found helpful in their practices. Please send your feedback to me at the UBC Division of CME Web site at www.cme.med.ubc.ca. CME

Table 1

Technology enabled decision support tools

The followings are some examples of technology enabled decision support tools:

Searchable Web Databases

1. MD Consult
www.Mdconsult.com
2. Stanford University Skolar
<http://md.skolar.com>
3. MEDLINE (through PUBMED)
www.ncbi.nlm.nih.gov/entrez/query.fcgi
4. MEDLINE plus (for patients)
medlineplus.gov

Web medical textbooks

1. e-medicine textbooks for various specialties
www.emedicine.com

Palm Pilot tools

1. ePocrates (drug databases)
www.epocrates.com
2. Evidence Based Medicine calculator
www.cebm.utoronto.ca/palm/ebmcalc
3. Medical Calculator
medcalc.med-ia.net
4. Medical rules
pbrain.hypermart.net/medrules.html

Suggested Readings

1. Sales GC: *A quick guide to e-learning: A "how to" guide for organizations implementing e-learning*. Expert Publishing, Andover, Minnesota, 2002. ISBN 1-931945-02-0
2. Sim I, Gorman P, Greenes RA, et al: Clinical decision support systems for the practice of evidence-based medicine. *J Am Med Inform Assoc* 2001; 8:527-34.

