Minitrack Chair’s Introduction: Clinical Support Systems

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This is a continuation of the minitrack that ran last year under the somewhat more colorful name of “Information Overload on the Physician’s Desktop.” The underlying theme remains the same: Given current Information Technology (IT), especially the Internet and ubiquitous personal computers, we certainly can process and distribute clinical records and knowledge; but just how do we use IT to maximum effect for the clinician working with the patient? This year provides us with a selection of eight papers across a range of sub-topics related to the theme.

In the lead paper, “Medical Portals: Web-Based Access to Medical Information” by Michael Shepherd, David Zitner and Carolyn Watter of Dalhousie University in Nova Scotia, a three-layer architecture for Web portals to medical information is described. The architecture supports “channels” of information for different classes of medical user. This represents some of the latest thinking on the now well-recognized potential of Web/Internet technology to facilitate integration and distribution of medical information.

The second paper, “Evaluating the Impact of Clinical Trials On-Line on Clinical Trial Awareness and Accrual” by Douglas and Cindy Stahl, and Joyce Niland of City of Hope National Medical Center in Duarte, California, continues as with the first paper to consider ways of shaping and exploiting Web/Internet technology. In this paper, however, the end user is not necessarily a health worker, but may be a patient or a member of the general public. Clinical Trials On-Line (CTOL) exploits the ubiquity of Web browsing technology to improve the accessibility of all to clinical research trial information with the hope of improving the rate of clinical research generally. Moreover, CTOL illustrates the important possibility of using IT to move tasks that were previously the precinct of health workers directly into the hands of patients.

The third paper, “Wireless Clinical Alerts for Critical Medication, Laboratory and Physiologic Data” by M. Michael Shabot, Mark LoBue and Jeannie Chen from the Cedars-Sinai Medical Center, Los Angeles, illustrates the potential of the familiar beeper device to link with sophisticated clinical alert monitoring. This direction is important, as the potential of clinical alerts to identify and head-off adverse events in hospitals is becoming increasingly well-established for facilities that have the appropriate technology and practices in place.

The fourth paper, “Providing Multiple Views to Meet Physician Information Needs” by Qing Zeng and James J. Cimino, of Brigham and Women’s Hospital, Boston and Columbia University, New York, respectively, provides empirical evidence that physicians benefit from the availability of different views of clinical data at different times. This helps to establish a valuable heuristic for the clinical workstation designer.

The fifth paper, “User-Interface Design for Medical Informatics: A Case Study of Kaiser Permanente” by Aaron Marcus, Karl Wiser, John Armitage, Volker Frank and Edward Guttman of Aaron Marcus and Associates, illustrates the significance of providing more than cursory attention to the interface design. Otherwise, we risk rejecting valid and useful medical informatics ideas because the prototype was not adequately packaged.

The sixth paper, “User-Centred and Driven Knowledge-Based Systems for Clinical Support using Ripple Down Rules” by Debbie Richards of Macquarie University, Sydney, describes the value of an approach to knowledge elicitation that is amenable to continuous review and revision. This is illustrated in the context of a clinical pathology system, LabWizard.

The seventh paper, “Infiltrating IT into Primary Care: A Case Study” by Sophie Cockroft, David Parry, Alice Breton, David Abernethy and John Gillies of the University of Otago, sets out an agenda for building IT exposure into the undergraduate curriculum so as to eventually achieve a critical level of IT literacy in the profession.

Finally, the eighth paper, “Fuzzy Logic in Clinical Practice Decision Support Systems” by myself, Gleb Beliakov and Berend van der Zwaag, discusses the benefits of the “fuzzy logic” concept of degree of membership as a basis for providing attention flags to doctors in the context of chronic disease care planning.

As with last years papers, we see a mixture of concepts from human-computer interaction, applied artificial intelligence and lots of use of Web technology, plus a few educational ideas, interbreeding toward the formulation of effective clinical support systems.