NEEDS FOR MEDICAL INFORMATION — DOCTOR'S VIEWPOINT

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Rapid growth of medical information has made medical decision making immensely complex. It is essential that medical decision support systems be implemented to help physicians acquire the information they need for patient care, research and education. A key prerequisite for any integrated academic information management system in the University Hospital is active collaboration with the Library, in order to implement a wide range of library information and related services. These should include basic scholarly information services such as Medline, full-text and other data bases. It will be desirable to develop a comprehensive decision-support system, by combining multiple sources of information that reside on disparate computers and in different database systems scattered throughout the Biomedicum and Clinicum.

Medical informatics deals with medical research, teaching, patient care, and hospital administration. Major areas of interest are: health-information systems, medical-decision-support systems, image and signal analysis, education and training, healthcare management, and many others. Information organization and retrieval is essential for the development of new knowledge. It is therefore desirable that teaching hospitals implement the most effective techniques of information retrieval, storage, and display. The Tartu University Clinicum possesses many of the components essential for a successful medical informatics program. It would be desirable to create an integrated infrastructure linking the university, hospitals, libraries, and homes, which would facilitate communication between doctors and improve efficiency of clinical research. Properly integrated academic information systems and hospital information systems should be installed to facilitate access to scientific literature and to provide common data bases for clinical research and patient care. Medical research often uses information which is collected in the normal course of treatment. Unfortunately, many of these data are not collected in a usable form. Moreover, a large part of the information which is used to evaluate hospital performance involves major problems.

The Faculty of Medicine will need to address the needs of continuing medical education of practising primary-care physicians and specialists by making use of interactive technologies. Education will move further toward distant learning, as educators and students experience that effective learning can be accomplished across geographic borders. Telemedicine will allow face-to-face communication between and among teachers and students. This promotes productive collaboration with other hospitals, academic institutions, professional societies, and IT industry.

The ability to use informatics effectively in making important decisions on patient care is one of the most important skills that residents should acquire during postgraduate studies. Besides, effective use of information retrieval stimulates interest and discussion, and may lead to increased opportunities for clinical research in the University Clinicum. In an ideal case, all residency staff members would have their own personal computers. In addition, common facilities should be available for the house staff to make searches and to work on research projects and teaching assignments at the hospital. Computers in teaching hospitals should be made available specifically for the house staff to

make literature searches and access to a variety of information data bases possible around the clock.

A survey conducted in September–October 1998 showed that 40% of the Estonian population aged between 15 and 74 had experienced using the personal computer at least once. The biggest group of computer users is students — 89% of them have used the computer. During the last year various changes took place in the reasons of computer usage — particularly concerning the use of the Internet and e-mail. The percentage of Internet users among those who used the computer during the last six months is already 42%. The total number of Web surfers is almost 152 thousand and that of e-mail users around 104 thousand.

The Internet provides an easy and accessible forum to share, disseminate, and use information. However, anyone can send information through the Internet regardless of their background, medical qualifications, professional stature, or intention. With about one-third of consumers now searching the Internet for health and medical information, the quality of this information becomes a critical issue. This issue will become even more acute in the light of rapid growth of the number of Internet users. Health information may originate from a leading expert, supplied with excellent documentation and a complete bibliography, or it may be in the form of emotional support from a support group. Unfortunately, the Internet can also deliver sales propaganda, the latest medical rumors, or even the most sophisticated pseudo-scientific scams. This makes it difficult for the user to determine which information is usable and reliable; how it can be evaluated, and when it should be ignored. Anonymity on the Internet is a problem as well. There is no editorial control over the material on the Internet because there is no control over the Internet in general. In an academic community, the function of editorial control is realized through peer review process. Another confounding factor in the evaluation of valid medical information is divergence of opinions among individual medical experts, who may have different opinions on certain issues.

Accuracy or scientific validity of information is the most obvious criterion for the quality of content. Healthcare information, available on the Internet, should reflect the principles of evidence-based clinical practice, including expert opinion. A valid, reliable article or website should include references to other sources, preferably articles in peer-reviewed journals, medical reference books, and authoritative texts.

Clinicians are daily confronted with problems concerning interpretation of diagnostic tests, harm associated with exposure to an agent, prognosis of disease in a specific patient, effectiveness of a preventive or therapeutic intervention, and costs and clinical consequences of many other clinical decisions. Hence they need to know whether the conclusions of a systematic review are valid, and whether recommendations in practice guidelines are sound.

Doctors find themselves in the process of seeing patients one after another, day after day, and it is very difficult for them to step back and ask the fundamental questions why they are doing what they are doing and whether they can achieve the desired results. The fundamental need of the doctor is a digital network of communications between specialists, labs, x-ray departments, hospitals, nurses, and physicians' practices at all levels throughout the region, including electronic consultation and exchange of information, among this a system of access to drug information for physicians and pharmacists.