

## **Information Superhighway.....Are We in the Fast Lane?**

As this century draws to a close, a leading challenge that faces medical profession is how to capture and apply the current avalanche of medical information. To practice medicine, an experienced doctor uses about 2 million pieces of information<sup>1</sup>, and to make a medical decision, a doctor must combine data at two perplexing knowledge-based levels: "low-level" and high-level"<sup>2</sup>. In many instances, failure to perform judiciously is attributed to either failure to compile and synthesize data properly, neglect of important detail, or inability to apply knowledge.

One proposed solution to cope with the vast expansion of knowledge in any one's field, is to obtain help and support from "invisible colleges" of proficient individuals through electronic mail and electronic bulletin boards<sup>3-5</sup>. Perhaps the "Internet" is the most conspicuous model of such a dazzling technology.

What is the Internet? It is the world's largest computer network. Actually, the Internet is not really a network, but it is a huge network of networks, all freely exchanging information. In fact, nobody knows exactly how big the Internet is because it is a collection of separately run smaller computer networks with no single place where all the connections are registered. However, it is estimated that over 30,000 networks are in the Internet, with approximately 1,000 new networks per month being added, and with at least 2 million machines connected to it.

Historically, the Internet was born as a military experiment in network design. The aim was to create a network that would function during a nuclear war. The ancestor of the Internet was the ARPANET (Advanced Research Projects Agency), a project started by United States Department of Defense in 1969. The infallible networking part involved dynamic rerouting. If one of the network links becomes disrupted by a military attack, the traffic on it could automatically be rerouted to other links.

The medical uses of the Internet include four principal services. First, the electronic mail: Using the appropriate electronic address, one may send a message to any user on the network anywhere in the world and it usually arrives within minutes. This can advance orderly communications, facilitate obtaining information, and allow acquiring consultation from experts. Second, remote login: This function allows a user to log into any machine on the Internet using appropriate user identification and password to interact with the machine. Third, the file transferee protocol (FTP): This function, permits the user retrieve a file from a remote system and bring it to one's own machine. These files can be text or image files, or any other programs. Many medical software offered free by universities all over the world can be downloaded using the Internet's FTP. Fourth, transferring images: This can be achieved by using the digital image processing provided by a low cost digital networks. The function

has been particularly applied in teleradiology where radiological images can be processed and transmitted through the Internet for seeking help from experts<sup>6</sup>.

Finding your way through the various networks on the Internet may not be an easy task. Nevertheless, there are now many software packages such as 'Archie', 'Gopher', 'Veronica', and 'Internet in a Box' that have made locating resources a great deal easier.

On the information superhighway of the Internet, there is a growing number of useful medical resources. Databases such as the MEDLINE from the National Library of Medicine is an example of a database that is now available on the net. Another database is the CANCERNET, which is a comprehensive database that has an extensive information that is essential for oncologists, and patients alike. Another type of resources on the Internet is the bulletin boards such as the one provided by the Food and Drug Administration(FDA). Besides, there is an immense number of discussion groups in various fields of medicine, medical subspecialties, and allied health<sup>4</sup>. Personally, I have joined several of these scientific groups such as Decision-Making in Medicine, BMDP Statistical Software Support Group, etc. Membership of these scientific groups is recommended as they provide many services from consultation, to exchange of knowledge and information, to guidance in your research projects. Another service that is also available on the Internet is the electronic newsletters such as the Center for Disease Control Morbidity and Mortality Report, and the FDA News.

Due to the restricting nature of an editorial, I was only able to provide facts about some of the aspects of today technology in communications and exchange of information and its implied impact on medical profession. The issue is an extensive one and certainly the progress is fast and and unquestionably faster than anyone's imagination. Therefore, practicing physicians, all health care workers, and health planners have to join the race. We should lay the foundation for creating well-equipped departments and units, staffed with professional experts to introduce the concepts of medical informatics in our medical schools. These departments and units should also raise the awareness about the challenge of the future. Beware, medicine is on the superhighway<sup>7</sup>, and we ought to be in the fast lane.

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## REFERENCES

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