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## Medicine and the Internet: why physicians should pay attention

Consider a hypothetical physician, who one morning while sipping coffee checks his e-mail and finds a note from a patient. The patient was recently found to be infected with human immunodeficiency virus, and would like more information about the disease. In particular, the patient wonders if he should tell his girlfriend.

Using his computer, the physician quickly locates HIV treatment guidelines from the National Institutes of Health, prevalence figures from the Centers for Disease Control and Prevention, reports of trials of newly released protease inhibitors, patient education materials, and on-line discussion and support groups. He saves these materials, attaches them to the patient's electronic chart at the hospital, and also saves them for a teaching conference the next day. He then sends a message back to the patient, attaches the relevant patient education materials, and asks the patient to schedule a visit with him.

Also using his computer, he orders some laboratory tests for the patient and sends a prescription to the pharmacy.

Finally, he logs his time as a level 4 encounter, and the time spent reading the articles he found as Category I Continuing Medical Education credit.

### ■ PREPARE FOR THE FUTURE

Such a scenario is still in the future for most physicians, but not very far in the future. We are already moving in this direction, using the Internet to link all aspects of health care.

Already, physicians can use the Internet to

communicate instantly with patients and colleagues anywhere in the world, get information on nearly any topic at the click of a button, and practice medicine more effectively. As with any new technology, some persons may be reluctant to use computers and the Internet at first, but as time goes on we will wonder how we ever did without them. The question for physicians is no longer whether to bother to be connected to the Internet, but whether we can afford not to.

### ■ WHAT IS THE INTERNET?

The Internet is a network of networks. It was sponsored originally by the Department of Defense to link computers at key universities and military bases. The initial network used a routing process designed to be able to function even if one of the links was destroyed by a nuclear attack. From this Cold War beginning, the Internet has grown into a network that spans the entire globe, the backbone of which is formed by high-speed links within the United States. The National Science Foundation oversees its operation.

Use of the Internet remained largely limited to academic scientists and computer professionals until two inventions in the early 1990s made the Internet easy to use: hypertext markup language (HTML), a means of cross-linking information, and web browsers, software that displays not only the text written in HTML, but images and audio and video files. Besides these new developments, tools have been created for searching and cataloging the information on the Internet, leading to an exponential growth in the Internet's use.



## TABLE

SELECTED RESOURCES ON THE INTERNET  
AND THE WORLD WIDE WEB

The Internet is very dynamic and addresses of resources often change

## List servers (e-mail-based newsletters or discussion groups)

AIDS Information Newsletter ([listserv@wuvmd.wustl.edu](mailto:listserv@wuvmd.wustl.edu))  
 Association of the American Medical Colleges ([majordomo@aamcinfo.aamc.org](mailto:majordomo@aamcinfo.aamc.org))  
 MedPulse (<http://www.medscape.com.useraccountform.html>)  
 Morbidity and Mortality Weekly Report ([lists@list.cdc.gov](mailto:lists@list.cdc.gov))

## Medical education, clinical and patient support

AHA Heart and Stroke Guide (<http://www.amhrt.org/hs96/index.html>)  
 CHF net (<http://webaxis.com/chfnet/index.htm>)  
 Diseases, Disorders and Related Topics  
 (<http://www.mic.ki.se/Diseases/index.html>)  
 Geomedia (<http://www.reutershealth.com>)  
 The Health Services Technology Assessment Text (<http://text.nlm.nih.gov>)  
 Heart Web (<http://webaxis.com/heartweb>)  
 Intern Handbook (<http://www.ohsu.edu/clinweb/intern/intindx.html>)  
 The Medical Reporter (<http://www.dash.com/netro.nwx/tmr/tmr.html>)  
 Medscape (<http://www.medscape.com>)  
 Medconnect (<http://www.medconnect.com>)  
 Ovid (<http://www.ovid.com>)  
 The Primary Care Baseline Project  
 (<http://www.med.ufl.edu/medinfo/baseline/HN1.html>)  
 Primary Care Teaching Modules  
 (<http://www-med.stanford.edu:80/MedSchool/DGIM/Teaching>)  
 Virtual Hospital (<http://indy.radiology.uiowa.edu/VirtualHospital.html>)

## Internet guides and navigating tools for physicians

Cliniweb (<http://www.ohsu.edu/clinweb>)  
 Doctors' Guide to the Internet (<http://www.pslgroup.com/DOCGUIDE.HTM>)  
 Medical Matrix (<http://www.slackinc.com/matrix>)  
 Web Doctor (<http://www.gretmar.com>)

## Journals

Annals of Internal Medicine  
 (<http://www.acponline.org/journals/annals/annaltoc.htm>)  
 Cleveland Clinic Journal of Medicine (<http://www.ccf.org/ed/ccjhome.htm>)  
 JAMA and Archives of Internal Medicine  
 (<http://www.ama-assn.org>)  
 The New England Journal of Medicine (<http://www.nejm.org>)

## Discussion groups

Medicine On Line (<http://www.meds.com/mol/forums.html>)  
 New York Times Syndicate (<http://nytsyn.com/live/yhddiscuss.html>)

## WHAT IS THE INTERNET GOOD FOR?

## Electronic mail

E-mail messages have become as common as telephone calls. Messages can be as short as a word or as long as a book.

The advantages are obvious: messages reach the recipient's computer instantly, compared to days or longer for "snail mail." The recipient can pick up messages at his or her leisure, reply to them instantly, forward them to other people, save them, or even print them out. The sender can send "carbon copies" to any number of other people.

In fact, a number of organizations use this feature (called a list server) to send out electronic newsletters, for free, on request (TABLE).

## Educational resources

Libraries, medical journals, and information services provide abstracts and sometimes complete text of medical articles. Hospitals and major medical organizations provide information about educational programs (residencies, continuing medical education), and some provide continuing medical education on-line, for continuing education credit. Patient education and support groups abound. There are professional forums and news services.

THE DOWNSIDE OF THE WEB:  
LET THE READER BEWARE

Given the right tools, it is easier to publish something on the Internet than it is to publish a book. Therefore, one cannot accept without some thought information on the Internet and its most popular section, the World Wide Web. Some important points to consider when evaluating the reliability of information is the source of information (eg, a well-respected organization as opposed to a personal homepage), the authors of the material, and the date the information was revised. If you are reading a forum or on-line discussion, find out if there is a moderator and if she or he is a medical professional. ■