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Medical Education

Health resources and Internet with reference to HealthNet Nepal

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Abstract

Technologies with the ability to send information in a fast, efficient and cheap fashion, such as the Internet – can provide dramatic improvements in access to information, advice and care. This article discusses importance of Internet, applications of Internet in providing information services in the health field. The Internet was developed in western countries and the information flow is from North to South. But for decision making within a country, information generated within a country is needed. For this, an organization like HealthNet Nepal is developed. The article discusses the various services of HealthNet Nepal and discusses about its unique features as compared to commercial ISPs.

Key words: Internet; Discussion groups, Application of Internet

Internet

The terms 'Internet' or 'information superhighway' have become part of public life and physicians can make it work to their advantage. Computers can help for differential diagnoses, keep track of patient record and manage patient billing. All of these applications have already attempted to advance in the physician's desk; the first with the modest success and the last two inescapably. Computers teach, interact and collaborate from around the world in ways never been possible before[1]. The Internet can bring resources from the whole world to the physician's desk. This article will summarize the application and the resources that are available for physicians, the services of HealthNet Nepal (an ISP proving Internet services to the health community of Nepal), and the means to access them.

History of Internet. The concept of Internet was first developed by the US military. The first physical manifestation of the Internet was in September 1969, when four computers on the West Coast of the United States were connected as part of an Advanced Research Projects Agency (ARPA) experiment. The ARPA researchers determined that the way to make a communication system proof against decapitation was for it to be totally decentralised. So their design for ARPAnet, the basis for the Internet, had each computer connected by high-speed data cables to a number of neighbours. When computer A wants to send a message to computer B, it divides it into 'packets'. Each packet is sent to the neighbouring computer C with a note of the 'address' of B. Computer C looks up the best available route in the general direction of B, and forwards the message. If computer C disappears, A tries its other neighbours. In this sense, each packet is thrown into the Net and left to 'swim' to its destination.[3]

Internet applications. The Internet is primarily a tool for individuals, but it can also be a tool for health care organizations, a means of disseminating electronic journals and of teaching medicine, a tool for research, and a means of delivering health care. As with any relatively new technology, the Internet faces a number of hurdles- only some of which are technological. Perhaps one of the biggest hurdles to its wide acceptance in medicine is ignorance.

The applications of Internet can be broadly classified into two categories: Basic and Advanced[4]. The basic applications include the offline procedure i.e. the user can see the message or information once it is downloaded into one's computer. The advanced applications include the interactive process i.e. the user can see resources of host computer during the period of connection and can read or download according to his willingness.

Basic Internet Applications

E-mail. E-mail is the process of sending message through computer to individuals and groups. The basic unit of communication in e-mail is the message. A message consists of an envelope (heading) and a body as in ordinary letter mail. The envelope contains the address of the destination person and the body contains the content of the message.

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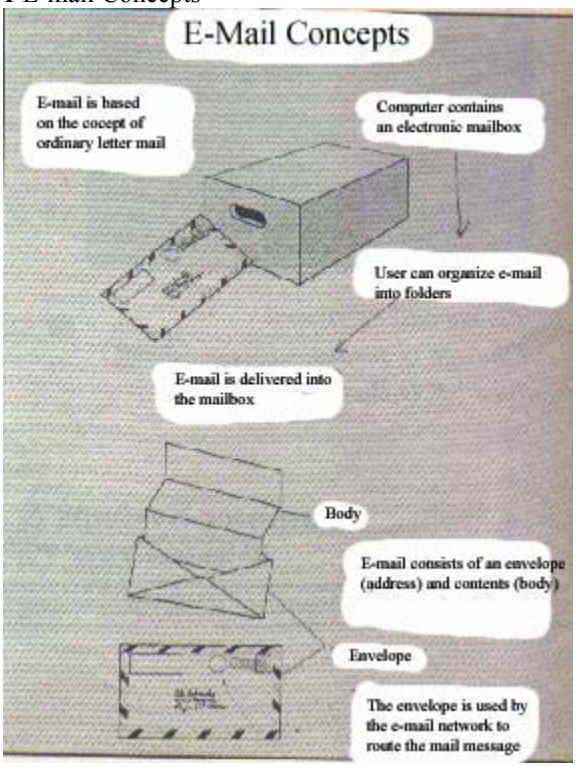
In addition, to the above most e-mail system also provide a number of additional functions such as:

- Delivery notification (proof of delivery);
- Priority mail
- Deferred delivery. The e-mail can be sent at a particular time and date.
- Mailing lists. E-mail can be sent to a number of recipients.
- Blind copy (BC) and Copy (CC). E-mail can be sent to third party without notice to the recipient (BC) and Copy (CC) with notice to recipient.

Everyone on the Internet has a unique e-mail address, and like a telephone number it must be entered exactly in order to make a connection. Each address is made up of the person's name (or number), then a '@' symbol, followed by the domain name. The domain name conform the following simple format:hostcomputername.
hostowner.hosttype.country. Hosts in the United States omit the last part i.e. country code. As an example, a computer called CyberTas might have Internet access via a commercial service provider called Demon Internet Based in the UK. It domain name is therefore:

Cybertas.demon.co.uk

Fig. 1 E-mail Concepts



Mailing lists. Mailing lists (also known as discussion groups) are used to send messages/information to a group of people with similar interests. A discussion groups is controlled by a computer (mail server) which forwards a copy of any message it receives to those people who have chosen to join (subscribe) the discussion group. If a member of the discussion group (subscribe) contributes to a discussion group then the message sent will be forwarded to every one else who is a part of that discussion group. It is therefore a useful means of disseminating information to a particular group of people. Discussion groups are of two types: moderated and unmoderated. In unmoderated, discussion group, messages are sent directly to the server and distributed. Generally, discussion groups are moderated so that messages are checked for suitability before being distributed to other member of the discussion group. Members of a discussion group can either receive messages as they are, or as a compilation of messages **(digest)** at the end of the day.

Types of mailing lists. There are four types of mailing list programs:

Listservs -- worldwide mailing list program that has central repositories for list of listservs available.
Majordomo -- mailing list program that has no central repository. Queries for list of majordomo sites are made to each server.
Listprocs -- ListProcessor developed by CERN. Similar to listserv.
Mailbase -- UK based mailing list program

To become the member of the discussion group users must subscribe in the format: "To: listserv@siteaddress and placing the command "subscribe listname your name.
The command varies depending upon type of mailing list.

A brief description of command for various types of mailing lists are as follows:

Listserv
All Listserv mailing-list subscription requests are sent to Listserv@domain.name (substituting the correct domain name). The body of the message to the Listserv is in the format:

Subscribe listname yourname

To send a message to the mailing list subscribers, use the address format:

Listname@domain.name

An example, to subscribe to 'BEHAVIOR', I would send the following message:

Send e-mail to: LISTSERV@ASUVM.INRE.ASU.EDU

Type in body of e-mail message: subscribe behaviour Mohan Pradhan

To send a message to the list subscribers, I would use the following address:

Send e-mail to behavior@asuvminre.asu.edu

Majordomo

While subscribing to majordomo the command should be as follows:

Send mail to : Listname@domain name

Type in the body of the message: subscribe listname your e-mail address.

An example to subscribe to 'PSYCHNET-SASIA', I would use the following address:

Majordomo@usa.healthnet.org

In the body of the message, I would write:

Subscribe psychnet-sasia mpradhan@healthnet.org.np

Listproc
The command for subscription to the Listproc and Listserv is the same.

Once subscribed, within a few hours the computer at the site addressed replies to the request. The information in this reply includes the methods to contribute to the group or to unsubscribe[5].

Fig. 2 Unmoderated Discussion Group: used for open discussion by members of the discussion group.

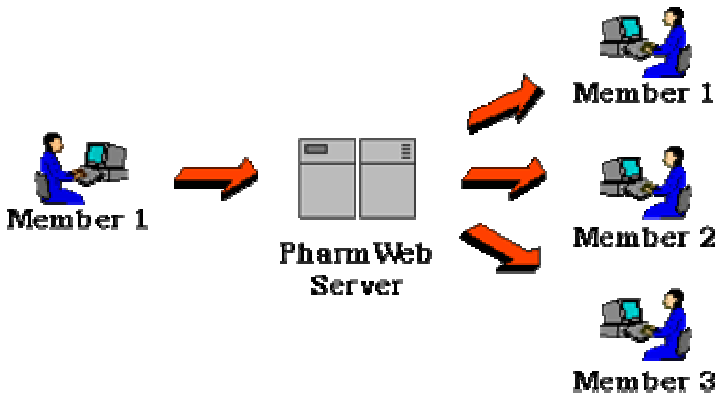
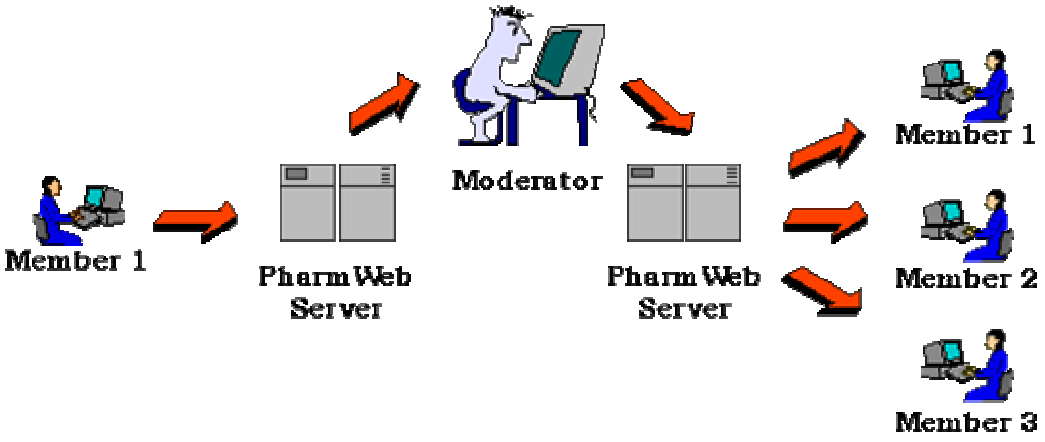


Fig. 3 Moderated Discussion Group:
used for open discussion by members of the discussion group, however, messages are checked by a moderator before distribution.



List of Discussion Groups
A brief list of psychiatric discussion groups accessible through HealthNet Nepal with annotation arranged alphabetically is given in appendix 1

Advanced Internet Applications
The advanced applications are interactive and require real-time input and response between the personal computer user and the host computer.

Telenet and File Transfer Protocol. With both applications it is possible to connect to the remote computer and shift through its hard drive. Telenet is useful to read a text located at the remote computer. With the FTP applications, almost any file can be copied from the remote computer just like copying file from hard drive to floppy drive. This method of copying is called downloading.

Two useful Internet resources can be down loaded using FTP. The first guide to "Internet Health Science Resources" by Lee Hancock, which can be found at ftp.sura.net in the directory "/pub/nic" under the filename "medical resources.xx-xx." The xx-xx represents the date of release and is updated several times a year. The second resource is called Zen and the Art of the Internet by Brendan Kehoe[5]. This is available at ftp.rpi.edu in the directory "/pub/communications/"

Many FTP resources are stored as compressed files with the annotation "zip". Once downloaded these files have to be unzipped to read or run a command.

Gopher. Gopher is an Internet tool that organizes file searches into menus and retrieves those files.

Telemedicine. Telemedicine is the interactive audiovisual communication between health care providers and their patients. The first use of telemedicine was in 1959 when X-ray images were transmitted across telephone line.

Usenet. The Usenet is a global network of discussion groups better known as Newsgroups. Newsgroups are divided into categories indicated by the first letters of their name. The eight broad categories of Usenet newsgroups follow(* is a wild card indicating various subgroups):

Alt.*	'Alternative', including support newsgroups
Comp.*	Computer-related discussions
Misc.*	Miscellaneous topics
News.*	Usenet and newsgroups administration
Rec.*	Recreation
Sci.*	Sciences (including the medical sciences)

Soc.*	Issues of social and cultural concern and interest
Talk.*	Controversy and debate

Each 'top-level' heading has a number of subtopics. For example, under **sci** comes **sci.med**, and under that several more specific topics such as **sci.med.aids** or **sci.med.radiology**.

The WWW or the Web and Graphic user Interfaces. The newest , easiest to use and most fun of the Internet application are those that use the WWW. These applications are called Web browsers[6] Web browsers combine all the applications described earlier into one easy to use program.

The Web consists of a collection of documents, called Web pages, which are coded in Hypertext Markup Language (HTML) and which may contain text, graphics, and/ or sound. Any item on a Web page can be formatted as a link to another Web page; these links are called hyperlinks. A single Web site may contain any number of linked Web pages. The initial page of a given site is called the *home page.* Hyperlinks also allow pages to be linked to pages at other sites, so that by following a series of links, you can view a series of different pages, posted at different sites.

What is a URL?

A URL, or a Uniform Resource Locator, specifies the location of a page on the World Wide Web. Each Web page resides on a computer which acts as Web Server: when you are viewing a Web page, your computer has received the information, through your modem, from that server.

A URL is made up of different components, including the protocol, the domain name, the directory path, and the file name. Take, for example, the following address:

http://www.healthnet.org/programs/promed.html

The first part of the URL, http:// is the protocol, which in this case stands for Hypertext Transfer Protocol. Other URLs begin with different protocols, like ftp:// for an FTP site, or gopher:// for a gopher site.

The second part of the URL, www. Healthnet.org/ is the domain name. It indicates the server on which page resides.

The third part of the URL, programs/ is the directory path, which shows where on the server the page can be found. The last part of the URL, promed. Html is the file name: in this case, it is a Web page, but it could also be an image file or a sound file.

HealthNet Nepal. In developing countries like Nepal, locally generated resources and resources developed elsewhere but about Nepal is needed for development work, planning and decision making. With the advancement of technology, all these resources can be made available in electronic form. A network should be established for capture, processing and dissemination of Nepal related health information. Keep in view of this concept, HealthNet Nepal was established with the help of SatelLife, USA on 1995. A brief description of this organization and its activities are given below:

Introduction

HealthNet Nepal is a non-governmental organization (NGO) that serves the Nepalese health community by providing affordable Internet service, access to health information, and technical support for several regional information-sharing initiatives. Housed at the Health Learning Materials Centre (HLMC) of the Institute of Medicine at Tribhuvan University (IOM), and affiliated with the Institutes of Medicine. The users of HealthNet Nepal consist of several prominent health and medical facilities, university departments, and non-governmental organizations. HealthNet Nepal was established in partnership with SATELLIFE, a non-governmental organization based in Watertown, Massachusetts whose mission is to combat isolation and information poverty among health professionals throughout the developing world.

In most of the health organizations in Nepal, HealthNet Nepal first introduced the use of electronic mail as a low cost communication media and at the same time its use for accessing information from various sources such as Medline, discussion groups and news groups.

Objectives

1. To overcome the isolation of health professionals from one another by creating network of people and organizations linked by appropriate, simple and inexpensive communication technology.

2. To provide access of national and international health related literature.

3. To be a provider of health information in a digested form.

4. To be a "matchmaker" i.e. connectivity broker between health care workers and sources of health information.

5. To update the current knowledge regarding health care system and research through distance education using appropriate communication technology.

How HealthNet Nepal is different from other ISPs.

HealthNet Nepal provides access to a wide range of locally generated medical and public health information resources. One example is the Annotated Health Science Bibliography of Nepal from 1950-2000, which is now available in a searchable database for health professionals. HealthNet Nepal also compiles a wide range of medical and public health information resources from the World Wide Web and other sites, making them available to its clients through the Intranet.

In addition, HealthNet Nepal provides an annotated list of World Wide Web addresses (URLS) for accessing electronic health information resources.

Services of HealthNet Nepal

Full Internet access. Users can access to full Internet link to use World Wide Web (WWW), gopher, e-mail, archie and FTP. These links can be over a dial-up modem from a single computer, or a dial on demand setup to serve an entire LAN.

Nepal related health information resources. Through our local Intranet wide variety of information resources related to Health of Nepal can be accessed. These resources include database, full text journals, health statistics, seminar reports, technical reports, Ph. D. and master degree thesis

Internet advertising. This is the age of advertising and Internet is the easiest way to reach to millions of people. HealthNet Nepal has its own Web site and it can design and host web pages for its users at very low price.

Consultancy service. HealthNet Nepal provides consultancy service in the use of Internet, database search, participation in the discussion group and usenet to get maximum benefit from the information services available from the Internet.

Discussion groups and Usenet. HealthNet Nepal server provides access to majority of discussion groups related to Health. These discussion groups can be accessed without subscribing to them.

Human resources. HealthNet Nepal consist of group of computer professionals and engineers backed by Institute of Engineering, Tribhuvan University.

How HealthNet Nepal is contributing to the Information resources in the Health Field. HealthNet Nepal is contributing through discussion groups, journals, thesis, databases from one window. A brief description of each one is given below:

Discussion groups

HealthNet Nepal is operating a discussion group named Psychnet-Sasia with the collaboration of Dept. of Psychiatry, Institute of Medicine. This forum specially focuses on issues related to South-Asia. About 25 international discussion groups are subscribed by HealthNet Nepal.

Journals

Various international and national journals in the field of health science can be accessed from HealthNet Nepal site. Among the national journals, the following journals can be accessed in full text:

Journal of Institute of Medicine
Journal of Nepal Medical Association
Journal of Nepal Paediatrics Association
Kathmandu University Medical Journal

Among the international journals, the following international journals can be accessed in full text:

Blackwell Publications. Blackwell Publishing is one of the world's largest journal publishers with a total of over 600 prestigious journals within physical sciences, life sciences, medicine, social sciences and humanities.

EBSCO databases. This database provides nearly 600 scholarly full text journals focusing on many medical disciplines. *Health Source: Nursing/Academic Edition* also features abstracts and indexing for nearly 850 journals. This database is updated on a daily basis.

Cochrane Library. The Cochrane Library consists of a regularly updated collection of evidence-based medicine databases, including The Cochrane Database of Systematic Reviews, which provide high quality information to people providing and receiving care and those responsible for research, teaching, funding and administration at all levels.

HINARI resources from WHO. It contains full text from 2100 leading journals. These services are provided by WHO.

MD Consult. This health resource provides nearly 40 renowned medical Reference Books. More than 25 titles from The Clinics of North America. Full-text articles from over 20 premier medical Journals. Over 600 Clinical Practice Guidelines in full text. 200 Continuing Medical Education modules. Nearly 3,000 customizable Patient Education Handouts. Comprehensive Prescribing Information for 30,000 medications. Abstract and commentary from more than 30 Year Books.

Database. Various database such as MEDLINE, POPLINE and Health Science Bibliography of Nepal can be accessed through HealthNet Nepal website.

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Thesis. HealthNet Nepal has started putting Postgraduate degree thesis in the field of health, which can be accessed on-line in the Acrobat format.

Recommendations and future goals

The rapid evolution of technology and the ever-increasing needs and demands of its users are compelling HealthNet Nepal to undertake another round of technical expansion. In particular, HealthNet Nepal seeks to add the following to its roster of services:

- a locally-based Web site with on-line health information relevant to Nepal
- video conferencing
- expanded distance education services
- hosting of Nepalese health-related Web sites
- on-line access to ongoing research projects related to health in Nepal
- usenet newsgroups
- e-fax
- pager service

Conclusion

Information helps in the process of knowledge and knowledge is regarded as power which is very much essential for the well being of human being. However, information has got time lag. To eliminate the time lag in communication, modern computer based communication technology should be used. Another important factor of information, is that information can be shared, so a forum such as HealthNet Nepal should be enhanced by contributing the locally generated resources in electronic format, which may be useful for the future generation. This will help to improve the global health care message at a time.

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Appendix 1

Health Related Discussion Group

AIDS & Related Epidemics
Cardiovascular Health
Community Medicine
Discussion Group on HIV-AIDS
Drug Medicine
Emergency Medicine
Epidemiological Methods Addressing Health Problems Essential Drug
Family Medicine
General Surgery
Health Services Research
Library Discussion Group
Nephrology
NICU
Nursing Education
Obstetrics & Gynaecology
Operative Nursing
Ophthalmology
Paediatrics Emergency
PROMED
Psycho Pharmacology
Psychology Practice
Public Health Nutrition
Statistical Package For Health –EPI-INFO
Tropical Diseases Research From Developing Countries Tuberculosis Discussion Group