Logging in, fetching files, reading news

Mark Pallen

This is the last article in a short series introducing the Internet to medical practitioners

Aside from email and the world wide web, there are several other systems for distributing information on the Internet. Telnet is a system that allows you to log on to a remote computer from anywhere on the Internet and affords access to many useful biomedical sites on the Internet. File transfer protocol (FTP) is a method of transferring files from one computer to another over the Internet. It can be used to download files, including software, from numerous publicly accessible "anonymous FTP archives" around the world. Such archives can be searched using a tool known as Archie. Network News is a system of electronic discussion groups covering almost every imaginable subject, including many areas of medicine and the biomedical sciences; MOOs are virtual environments that allow real time electronic conferencing and teaching over the Internet. It is difficult to predict the future of medicine on the Internet. However, the net opens up many possibilities not available through previous technologies. It is now up to medical practitioners to realise the Internet's full potential.

Telnet

Telnet is a tool that allows you to use a remote computer on the Internet as if your computer were a terminal directly connected to it (fig 1). The principal use of telnet is to manipulate files and run programs on a UNIX computer where you have an account. To create a telnet connection between your microcomputer and a UNIX machine elsewhere on the Internet, you need telnet client software such as NCSA Telnet for the Mac or DOS. You must supply the telnet program with the Internet address of the remote machine, then supply the remote machine with your login name and password.

There are several open access sites on the Internet where anyone can log in via telnet (table) by using a publicly advertised login name and password. Such sites usually allow you to use only a limited number of commands. You can search for open access telnet sites

Fig1—A typical telnet session

Fig 2—FTP client programs such as WS-FTP provide a user friendly interface

using an on line tool termed Hytelnet¹ via telnet² or the world wide web.³

Telnet can also be used to connect to MOOs (see below) and electronic bulletin board systems. Bulletin board systems allow people to log in and leave messages for others or even communicate in real time. Messages and discussions are typically organised into topic groups. Thousands of local bulletin boards operate throughout the United States, United Kingdom, and Europe. Some are accessible only by telephone; others can be reached on the net through telnet. Some bulletin boards are free; others charge for access. Bulletin board systems such as the WELL (whole earth 'electronic link) often act as virtual communities, providing intellectual, psychological, and social support for their users.⁴

Moving files

FILE TRANSFER PROTOCOL

File Transfer Protocol, or FTP, is a method of transferring files from one computer to another over the Internet. Graphics files, text files, and even programs can be transferred. On a UNIX machine the transfer commands are similar to those of UNIX itself. However, if you have full Internet access, you will find it easier to use an FTP client program that runs on your microcomputer; user friendly programs are available for most microcomputer operating systems (fig 2). In addition, most web browsers now also double up as FTP clients.

You can use file transfer protocol to move files to and from a UNIX machine where you hold an account; for example, I routinely use it to move sequence files between my Macintosh and various UNIX machines. A more common use of FTP is "anonymous FTP" which allows you to retrieve files from thousands of open access software and data archives around the world. With this, you can "bootstrap" yourself on to the net, obtaining all the software needed to use the net's resources.

To connect to an anonymous FTP site, you must supply the site's name (say, "ftp.somewhere.edu" or "ftp.somewhere.ac.uk"), and then give "anonymous" as the login name and your email address as the

Department of Medical
Microbiology,
St Bartholomew's Hospital
Medical College, London
EC1A 7BE
Mark Pallen, senior lecturer

Correspondence to:
m.pallen@ic.ac.uk

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Service	URL	Login instructions
The Biron system	telnet://155.245.10.133	Login name: biron Password: norib
Biotechnet electronic buyer's guide	telnet://biotechnet.com	Login name: BIOTECH Password: bguide
BUBL (bulletin board for libraries)	telnet://bubl.bath.ac.uk	Login name: bubl
ETNet at the National Library of Medicine	telnet://etnet.nlm.nih.gov	Login name: etnet
FDA (Food and Drug Administration) electronic bulletin board	telnet://fdabbs.fda.gov	Login name: bbs
Fedworld: National technical information service	telnet://fedworld.gov	
Grants bulletin board (Calstate)	telnet://atl.calstate.edu	Login name: grants
Health sciences libraries consortium CBL software database	telnet://shrsys.hslc.org	Login name: CBL
Higher education national software archive at Lancaster University	telnet://micros.hensa.ac.uk	Login name: hensa Password: hensa
HSTAT (health services/technology assessment text) (NLM)	telnet://text.nlm.nih.gov	Login name: hstat
Janet news and public access directory service	telnet://sun.nsf.ac.uk	Login name: janet
Medline and other databases	telnet://medlars.nlm.nih.gov	Account needed for Medline
Music and brain information database (MBI)	telnet://mila.ps.uci.edu	Login name: mbi Password: nammbi
NHS centre for reviews and dissemination	telnet://nhscrd.york.ac.uk	Login name: crduser Password: crduser
NIH grant line	telnet://wylbur.cu.nih.gov	Login name: .gen1 (must include comma) INITIALS? bb5 ACCOUNT? ccs2
National information services and systems (UK)	telnet://niss.ac.uk	
National Science Foundation center for biological timing	telnet://minerva.acc.virginia.edu	Login name: biotiming
Nurse Net Netherlands	telnet://bbs.nursing.nl	Login name: <Your name>
Oxford University Radcliffe Science Library	telnet://rsl.ox.ac.uk	Login name: gopher (to use the Gopher client) Login name: lynx (to use the Lynx WWW client) Login name: hytelnet (to use Hytelnet) Login name: libs (for LIBS Internet Access Software)
Texas Cancer Data Center	telnet://txcancer.mda.uth.tmc.edu	Login name: TCDC
The Well: the world-famous BBS	telnet://well.com	Login name: guest
Wisdom: Wellcome information service databases	telnet://wisdom.wellcome.ac.uk	Login name: wisdom

password. On connecting to an anonymous FTP site, you will usually start off in the "pub," or public, directory. From here, you can move down the directory hierarchy to the location of any desired software or other files. Some programs allow you to enter the file path before connecting, so that you are automatically placed in the appropriate directory. The directories usually contain a "ReadMe" file and other text files describing the directory's contents.

Many web pages now contain hypertext links to FTP sites. These are driven by uniform resource locators (URLs) such as:

ftp://ftp.qmw.ac.uk/pub/aids/aids9409.dat

To use such a locator to make a connection through a dedicated FTP client you must ignore the ftp://preface, then supply the transfer program with the name of the transfer site:

ftp.qmw.ac.uk

and with the filepath:

/pub/aids/aids9409.dat.

When using file transfer protocol, as with email, it is important to note the difference between ASCII files (text files) and binary files (any other kind of file—programs, images, sounds, etc). You will often be asked to state whether you wish to download a file in text or binary format. In text mode, the FTP software may make changes to the file during transfer to compensate for differences in the way different operating systems handle text. For example, UNIX terminates lines with the linefeed character; the Macintosh operating system uses a carriage return; and MS DOS uses one of each. Correcting for these differences during a text transfer is useful. However, similar changes to a binary file would be disastrous. Fortunately, the FTP software is often able to tell

automatically whether a text or binary transfer is more appropriate.

Many files in anonymous FTP archives are encoded in a compressed format, so that they take up less server space and can be downloaded more quickly. On receipt they must be decompressed with the appropriate

Getting more information on the net

If after reading these articles and setting up your Internet connection you want to learn more, there are several sources of information and guidance for newbies. Unfortunately, most books on the Internet are out of date by the time they are published. Ed Krol's *Whole Internet User's Guide and Catalogue*³⁸ remains a good solid introduction to the net. Otherwise, you are probably better off concentrating on Internet magazines such as *Internet*, *.net*, *Internet World*, *NetUser*, *Internet & Comms Today*, and *Wired*, all of which also have a presence on the web.

The mailing list NewbieNewz is aimed at answering newbie's questions and provides much information of value to the newbie; to subscribe send an email message to

Majordomo@pentagon.io.com

with the message

subscribe newbienewz<your email address>

in the body text.

Among network newsgroups, the following are of use to newbies:

alt.newbie, news.announce.new users,
news.new users.questions,alt.answers.

Useful information for newcomers to the Internet is available via the web site "NETLiNkS! newbie help Link"³⁹ and from Patrick Crispin's Internet road map.⁴⁰

decompression software, which will vary according to the compression format (.gzip, .zip, .sit, .hqx, .tar, .uu, .uue, .cpu) and operating system (Macintosh, DOS, Windows, Archimedes, Atari, or Amiga). Although a few compression formats are particular to a given platform (.sit, .sea, .cpt for the Mac, .exe for self extracting DOS programs), most compression formats can be used, given suitable software, on most platforms.

FINDING FILES: ARCHIE

It is one thing knowing that millions of files are potentially available on thousands of anonymous FTP sites; it is quite another being able to locate a program or other file suitable for a particular task when you may not even know that such a program exists, or if it does, where it might be found. You could try just browsing through various anonymous FTP sites. However, sites vary in how well indexed they are and how easy it is to find applications of a given type. In Britain the HENSA software archive^{5,6} is particularly well indexed and is a good starting point if you wish to browse for applications of a particular type.

If you know the name of the file that you are looking for, things get easier, thanks to a utility called Archie

Fig 3—A typical Archie search (here using the client program Anarchie)

(fig 3). Archie consists of a set of computers on the Internet that continually search all the anonymous FTP sites around the world and then compile the results into a single searchable database. Currently, Archie tracks the contents of over 950 anonymous FTP archive sites containing some 5.7 million files representing more than 94 gigabytes of information. Although Archie client software exists for several operating systems, it is often now easier to do Archie searches through a web tool known as Archieplex.⁷ Searches with Archie typically take a few minutes. Archieplex and most Archie clients allow automatic retrieval of any files found using built in FTP routines. If you do not have full Internet access you can access Archie by email (send a message to archie@archie.doc.ic.ac.uk containing the word "help"), or by telnet.⁸

FTPMAIL

Those with access to the Internet only through email can still retrieve files from FTP servers in unencoded format (albeit rather slowly) using one of a series of FTPmail servers (box). Details of how to do this can be obtained from Bob Rankin's *Guide to Off-line Internet Access*⁹ or by sending the command "help" in the body of an email message to your nearest FTPmail server (box).

Network News

Network News provides a powerful alternative to list servers for group communication. It is run by

Fig 4—The newsgroup bionet.microbiology as portrayed by Netscape

entirely different server software to list servers and depends on special client programs, or "newsreaders," for the subscriber to read or contribute messages. Information sent to a local network news server is rapidly propagated to similar servers around the world, so that messages can be read by the entire Internet community. However, unlike the messages from list servers, there is no risk of network news messages cluttering up your electronic mailbox.

NEWSGROUPS

Network News is divided up into numerous newsgroups. The largest collection of newsgroups is USENET, which contains several thousand newsgroups covering almost all imaginable topics, from alcohol to Zen. USENET newsgroups are arranged in a hierarchy, which originally had seven top level categories: sci (science), comp (computing), soc (social), talk, misc (miscellaneous), news, and rec (recreational). The addition of the alt (alternative) category to this original list triggered an explosion of often bizarre newsgroups. Each top level category is further subdivided many times, with each group conforming to a hierarchical naming convention, so that, for example, sci.med is a general medical newsgroup within the sci category, and sci.med.aids is a newsgroup dealing with the medical and scientific aspects of AIDS.

Not all newsgroups are part of USENET. Local university sites often run newsgroups that are only available locally (at Imperial College, for example, there are several ic.* newsgroups). The BIONET newsgroups (fig 3) form a widely available set of newsgroups, outside USENET, that are of interest to biomedical workers. The number of newsgroups taken by sites varies; some of the more perverse or arcane newsgroups, particularly those involving sex, are carried by very few sites.

FTPmail servers

ftpmail@src.doc.ic.ac.uk
ftpmail@grasp.insa-lyon.fr
ftpmail@ftp.sunet.se
ftpmail@ftp.uni-stuttgart.de
ftpmail@ieunet.ie
ftpmail@archie.inesc.pt
ftpmail@ftp.luth.se
ftpmail@decwrl.dec.com
ftpmail@census.gov
ftpmail@ftp.Dartmouth.EDU
ftpmail@sunsite.unc.edu
ftpmail@ftp.SHSU.edu
ftpmail@cs.uow.edu.au

Once you have access to a news server, you can read or contribute to thousands of newsgroups. However, it is useful to select, or "subscribe to," a set of newsgroups that you will want to follow in detail. The medical newcomer to the Internet should take a look at the newsgroups in the box and subscribe to those that seem most interesting. After a while you will get an idea of which groups are worth while; you can then unsubscribe from the less useful ones.

NEWSREADERS

Although the basic information within a newsgroup remains the same, the way it is portrayed to the viewer depends on the newsreader. There are many different newsreaders, on many different operating systems, and they vary considerably in their ease of use. An important property of the newer "threading newsreaders" is their ability to read articles by topic ("thread" in the jargon) rather than in the order in which they are posted.

The world wide web browser, Netscape, is now also able to act as a threading newsreader (fig 5). The advantage of using a web browser as a newsreader is that hypertext links can be made to newsgroups from web pages (using uniform resource locators prefaced with "news:") and links to web pages to be followed directly from newsgroup articles. Network News can also be accessed by email.⁹

Network News etiquette

As with email and other aspects of the Internet, there are rules that govern good behaviour in the network newsgroups.¹⁰⁻¹² Although, you should start off by "lurking" (reading without contributing), netiquette requires that you should also contribute to the newsgroup, whenever appropriate. You might like to start a new thread with a request for information, an announcement of new Internet resources relevant to the newsgroup, or an invitation for discussion, or you might prefer to follow a thread started by others, answering questions or discussing opinions (although some requests for information are best answered by sending an email message to the poster).

As with email messages, the substance of a newsgroup posting should be summarised in the subject line and previous messages should be quoted in abbreviated form to provide a context for the new information. Contributors should post only material that is clearly within the scope of the newsgroup. This is usually defined in a list of frequently asked questions (or "FAQ") about the newsgroup, which is posted to the newsgroup at regular intervals or can be retrieved through file transfer protocol¹³ or the world wide

Selected newsgroups of interest to biomedical workers

alt.image.medical	bionet.virology
alt.med.allergy	bionet.xtallography
alt.med.cfs	misc.education.medical
alt.med.equipment	sci.engr.biomed
alt.med.fibromyalgia	sci.med
bit.listserv.medforum	sci.med.aids
bit.listserv.medlib-l	sci.med.dentistry
bit.listserv.mednews	sci.med.diseases.cancer
bit.med.resp-care.world	sci.med.emergency
bionet.cellbiol	sci.med.immunologysci.
bionet.general	med.informatics
bionet.genome.	sci.med.nursing
chromosomes	sci.med.nutrition
bionet.immunology	sci.med.occupational
bionet.journals.contents	sci.med.orthopedics
bionet.journals.letters.	sci.med.pathology
tibs	sci.med.pharmacy
bionet.microbiology	sci.med.physics
bionet.molbio.hiv	sci.med.psychobiology
bionet.molbio.methods-	sci.med.radiology
reagents	sci.med.telemedicine
bionet.parasitology	sci.med.transcription
bionet.software	sci.med.vision
bionet.software.www	talk.politics.medicine

web.^{14 15} Advertising of products or services may or may not be allowed, depending on the type of newsgroup (it is forbidden in the BIONET groups). Where advertising is permitted, it should be done discreetly and only to an appropriate newsgroup. Mass advertising by posting inappropriate messages to a large number of groups—a practice known as "spamming"—is likely to lead to a deluge of complaints by email, sufficient to drive the spammer off the net.

Despite the rules of netiquette, some network newsgroups are characterised by a low level of common courtesy and a poor signal to noise ratio. Naive or inappropriate postings may be met with gratuitous insults (or "flames") far worse than anything you may have experienced off line. If you reply in kind, you may set off a "flame war," the newsgroup equivalent of a bar room brawl. Do not be put off, however; both flaming and inappropriate postings are not very common on the BIONET newsgroups. Another way of improving the quality of the information you receive from Network News is to use an "infobot," a program that searches out postings that might interest you and then emails them to you. Stanford University's Netnews Filtering Service¹⁶ scans the USENET groups, while the EBI Netnews Filtering Service¹⁷ scans the BIONET groups. Both are accessible on the web and by email (send an email with "help" in the body to

netnews@db.stanford.edu

or to

netnews@ebi.ac.uk).

The rest of the net

The Internet is bristling with activity. In these articles a selection of services of most immediate use to the biomedical worker have been covered. There are many other Internet tools,¹⁸ including the following.

INTERNET RELAY CHAT

Internet relay chat (IRC) is an Internet resource that allows several people, whatever their geographical location, to converse in ASCII on the net.

MUDS AND MOOS

MUDs (multiuser dungeons) are on line multiuser

Fig 5—A typical set of threads from the newsgroup bionet.microbiology, as seen by the UNIX newsreader, TIN

When things go wrong

The Internet is far from perfect. It is sometimes impossible to connect to an FTP, telnet, gopher, or web site; the site might be too busy, it might be down for maintenance or other problems, or you may have made a typing mistake. If you get a "login incorrect" message from a telnet site, then check the spelling of the site name, login name, and password (these last two are case sensitive). If an email message bounces it is usually because you have mistyped the email address.

If, when using the web, you get a message saying that the file you want cannot be found, try nibbling back at the righthand end of the URL, for example, instead of

<http://www.qmw.ac.uk/~rhbm001/intro.html>

try:

<http://www.qmw.ac.uk/~rhbm001/>

or

<http://www.qmw.ac.uk>

If, when you start to load a web page, things start slowing down, try using the "Reload" option on your web browser; you may get a quicker connection. If you are in Europe try to avoid using the net after midday, as it slows down once North America comes on line.

games that provide virtual environments of almost every conceivable type. In a MUD you supply the computer with commands that move your imaginary self through an imaginary environment. The great advantage of MUDs over conventional computer games is that many players can interact with each other in the same imaginary environment, often also adding to that environment.

MOOs (MUDs, object oriented) are derivatives of MUDs that can be used not just for playing games but also for electronic conferencing. MOOs of interest to biomedical workers include the BioMOO,^{19,20} the Neurosurgery MOO,^{21,22} the Diversity University MOO,²³ and the CollegeTown MOO.^{24,25} In a MOO, academics from around the world can meet on line without physically leaving their offices. For example, during a recent Internet based course on sequence analysis²⁶ I attended tutorials at the BioMOO in which students from Israel and Europe were taught by an expert in the United States.

VOICE AND VIDEO ON THE NET

There is now software that allows real time international conversations on the net. This is likely to threaten current international phone rates. Multicasting video is also possible on some parts of the Internet.

The future of medicine on the net

The medical colonisation of cyberspace has only just begun. It is difficult to predict the future of medicine in this new world. Some have already proclaimed the death knell of medical journals,²⁷ but others point out that the Internet cannot yet compete with a good library as a source of scientific information.²⁸ Medical librarians are already planning to tame the Internet's wild frontier with the ambitious OMNI (organising medical networked information) project, which aims to provide biomedical workers with a gateway to high quality networked information.²⁹

The Internet will prove most immediately useful in medical education and research; clinical applications—for example, in telemedicine—are further off. McLaren and Ball, discussing telemedicine, recently emphasised the problems of being mesmerised by new technologies.³⁰ However, the Internet promises possibilities that are simply not available through earlier technologies. Imagine worldwide, national, and local formularies that could be updated hourly or daily and that would be available from terminals in every office, clinic, or ward. Imagine an electronic peer review system in which a preprint can be criticised by a thousand peers in a week before it is officially published. Imagine students and teachers from the world's medical schools conducting virtual case conferences in cyberspace. Imagine practising an evidence based medicine, where a summary of all research on a clinical problem could be retrieved via the Internet in minutes. Prototypes for all of these already exist.^{20,31-37} It is now up to us to realise the Internet's full potential for medical education, for medical research, and ultimately also for clinical practice.

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- 1 Hytelnet Information Page: <http://www.lights.com/hytelnet/>
- 2 Hytelnet telnet access at Oxford: telnat.rsl.ox.ac.uk:23/
- 3 Hytelnet web access at Cambridge: <http://www.cam.ac.uk/Hytelnet/index.html>
- 4 Rheingold G. *The virtual community*. London: Minerva, 1994.
- 5 HENSA Micros via the web: <http://micros.hensa.ac.uk/>
- 6 HENSA Micros via FTP: <ftp://micros.hensa.ac.uk/>
- 7 List of Archie services: <http://pubweb.nexor.co.uk/public/archie/servers.html>
- 8 Archie via telnet: <telnet://archie.doc.ic.ac.uk>
- 9 Accessing The Internet By E-Mail: Doctor Bob's Guide to Offline Internet Access, 4th ed, July 1995: <ftp://mailbase.ac.uk/pub/lists/ii-is/files/e-access-inet.txt>
- 10 A primer on how to work with the usenet community: <http://www.lib.ox.ac.uk/internet/news/faq/archive/usenet.primer.part1.html>
- 11 Hints on writing style for Usenet: <http://www.lib.ox.ac.uk/internet/news/faq/archive/usenet.writing-style.part1.html>
- 12 Rules for posting to Usenet: <http://www.lib.ox.ac.uk/internet/news/faq/archive/usenet.posting-rules.part1.html>
- 13 FAQs by FTP: <ftp://ftp.lib.ox.ac.uk/faqs/>
- 14 FAQs by category: <http://www.lib.ox.ac.uk/internet/news/faq/by-category.index.html>
- 15 FAQs by news group: <http://www.lib.ox.ac.uk/internet/news/faq/by-group.index.html>
- 16 Stanford Netnews Filtering Service: <http://woodstock.stanford.edu:2000/>
- 17 EBI Netnews Filtering Service: <http://www.ebi.ac.uk:80/sift/>
- 18 Internet Tools: <http://www.rpi.edu/Internet/Guides/decem/itools/internet-tools.html>
- 19 Telnet to BioMOO: <telnet://bioinformatics.weizmann.ac.il:8888>
- 20 The BioMOO web home page: <http://bioinformatics.weizmann.ac.il/BioMoo>
- 21 Telnet to Neurosurgery MOO: <telnet://samba.oit.unc.edu:7777>
- 22 About the Neurosurgery MOO: <http://sunsite.unc.edu/Neuro/neuromoo.html>
- 23 Telnet to Diversity University MOO: <telnet://moo.du.org:8888>
- 24 Telnet to CollegeTown MOO: <telnet://next.cs.bvc.edu:7777>
- 25 CollegeTown Information File: <http://info.mcc.ac.uk/hpctec/courses/Bio-computing/vsns/bcd/Curric/Netwkg/collegetown.txt>
- 26 Welcome to the VSNS BioComputing Division: <http://info.mcc.ac.uk/hpctec/courses/Biocomputing/vsns/bcd/welcome.html>
- 27 LaPorte RE, Marler E, Akazawa S, Sauer F, Gamboa C, Shenton C, et al. The death of biomedical journals. *BMJ* 1995;310:1387-9.
- 28 GNA-VSNS Biocomputing Course, Chapter 2: Networking: <http://info.mcc.ac.uk/hpctec/courses/Biocomputing/vsns/bcd/Curric/Netwkg/ch2.html>
- 29 OMNI (Organising Medical Networked Information): <http://www.omni.ac.uk>
- 30 McLaren P, Ball CJ. Telemedicine: lessons remain unheeded. *BMJ* 1995;310:1390-1.
- 31 Doyne & FMLH drug formulary: <http://www.intmed.mcw.edu/drug.html>
- 32 Virtual Pharmacy Center: drug databases: <http://www-sci.lib.uci.edu/~martindale/Pharmacy.html#PC3>
- 33 xxx.lanl.gov e-Print archive: <http://xxx.lanl.gov/>
- 34 Centre for Evidence-Based Medicine: <http://cebml.jr2.ox.ac.uk/>
- 35 Gerald Malone launches Cochrane database of systematic reviews: <http://www.coi.gov.uk/coi/depts/GDH/coi6331a.ok>
- 36 The Cochrane Collaboration: <http://hiru.mcmaster.ca/cochrane/default.htm>
- 37 NHS Centre for Reviews and Dissemination: [telnet://nhsrtd.york.ac.uk](http://nhsrtd.york.ac.uk)
- 38 Krol E. *The whole Internet user's guide & catalogue*. 2nd ed. London: O'Reilly and Associates, 1994.
- 39 NETLINKS! newbie help link: <http://www.interlog.com/~csteale/newbie.html>
- 40 Patrick Crispin's Internet Roadmap: <http://www.brandonu.ca/~ennsnr/Resources/Roadmap/Welcome.html>