

## Gastroenterology and the Internet

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### ABSTRACT

**Background:** The Internet has come to play a significant role in health care across the world. Simple specific how-to-use information about the Internet for Gastroenterologists is lacking in the literature.

**Aim:** To explain the origin, functions, use and impact of the Internet and to provide a list of important web site addresses related to Gastroenterology.

**Methods:** We undertook a detailed scan of the Internet and identified a large number of web sites pertaining to Gastroenterology. The sites were then thoroughly searched to evaluate their potential usefulness to Gastroenterology clinicians and researchers. A list of web site addresses were then compiled according to specific sub-areas of Gastroenterology.

**Conclusion:** This overview of Internet and compilation of important web site addresses is expected to stimulate and instruct Gastroenterologists in the use of the Net in health care delivery and research. The list of web sites according to subspecialties provided in this article is expected to facilitate their search.

### BRIEF HISTORICAL NOTE

The Internet was conceived in 1969, when the US Defence Advanced Research Projects Agency developed a computer network (ARPANET) specifically designed to survive foreign attack. The aim of this network was to send digital information in small packets that move independently through the network until they reached their destination. When one computer failed, the digital traffic would re-route to bypass the disabled site, so maintaining the integrity of the communication line.

Later on, ARPANET was adopted by the scientific community as a means of information exchange between geographically separated research workers. In 1990 the National Science Foundation Network (NSFNET) replaced ARPANET. The Internet as we know it today relies on a backbone of high-speed networks (telephone lines, fiber optics, microwave, and satellite links) and is currently also accessible to commercial organisations. The world wide web was developed jointly in 1989 by the Massachusetts Institute of Technology computer sciences department and the European Center for Particle Research (CERN) as a standard user interface.

### THE WORLD WIDE WEB

The Internet is a large, worldwide network of interconnected computers: it consists of several communication media, the best known of which is the world wide web (www, w3, the web). Because of its user-friendly interface, the world wide web is Internet's most exciting and popular development. Based on the use of hypertext (a fragment of text that refers to information elsewhere and can be accessed by clicking on it), web pages are written in the Hypertext Mark-up Language (HTML) and sent through the Internet by the corresponding hypertext transfer protocol (http). The www consists of many 'web sites', each of which has a unique digital address and a uniform resource locator (URL). This URL has the general form <http://www.rug.ac.be/>, where 'http' refers to the protocol used, and 'rug.ac.be' refers to the server (computer) where the information is stored.

The information on a web page is made visible by a world wide web client program or 'browser'. Browsers are now available for most operating systems; the most commonly used being the Netscape Navigator and Microsoft Internet Explorer. Recent versions of these programs allow moving images, video samples and sound to be integrated in a web page. A list of few 'world wide web' sites of interest is given in Table I.

### ELECTRONIC MAIL

Postal delivery at the speed of light is possible with electronic mail (e-mail or email). The Internet access provider (IAP) functions as a post office, receiving and forwarding electronic mail. The IAP also provides e-mail addresses, which are in the

### INTRODUCTION

The Internet is a massive expanding body of information, more popularly known as the 'information superhighway'. With an estimated 320 million web pages available,<sup>1</sup> the Internet has come to influence everyday life. The last few years have seen an exponential growth in the number of people with access to the Internet. Despite its growing role in commerce and entertainment, the Internet remains, as it was originally conceived, a powerful instrument for the exchange of scientific knowledge.<sup>2</sup>

Internet use is estimated to double each year. It is literally becoming a lifeline for the human community. Thousands of web sites pertaining to pure medical information are available on the net. Data that previously would have required hours of research in a medical library can now be found easily by anyone with access to the Internet. This has enhanced the medical professional's ability to gain extensive knowledge of research findings from many different medical specialities.

The aim of this paper is to explain the impact, origin, functioning and content of the Internet and to compile important website addresses related to gastroenterology.

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Table I. World Wide Web Sites of Interest

Web Sites	URL
History of the Internet	<a href="http://isoc.org/internet-history/">http://isoc.org/internet-history/</a>
Zen the art of the Internet	<a href="ftp://ftp.internic.net/pub/internet-doc/zen.txt">ftp://ftp.internic.net/pub/internet-doc/zen.txt</a>
Web origins and beyond	<a href="http://homepage.seas.upenn.edu/~lzeltser/WWW/#About_WWW">http://homepage.seas.upenn.edu/~lzeltser/WWW/#About_WWW</a>
Web browsers:	
Internet Explorer	<a href="http://www.microsoft.com/ie">http://www.microsoft.com/ie</a>
Lynx	<a href="ftp://ftp.cc.ukans.edu/pub/WWW">ftp://ftp.cc.ukans.edu/pub/WWW</a>
Netscape Navigator	<a href="http://home.netscpae.com/">http://home.netscpae.com/</a>
Email programs:	
Beginner's guide to effective e-mail	<a href="http://www.webfoot.com/advice/email.top.html?Yahoo">http://www.webfoot.com/advice/email.top.html?Yahoo</a>
Introduction to e-mail	<a href="http://alabanza.com/kabacoff/InterLinks/email./email.html">http://alabanza.com/kabacoff/InterLinks/email./email.html</a>
Eudora	<a href="http://www.eudora.com">http://www.eudora.com</a>
Microsoft Exchange	<a href="http://www.microsoft.com/exchange/eval.html">http://www.microsoft.com/exchange/eval.html</a>
FTP program:	
Fetch 3.0/Mac	<a href="http://www.dartmouth.edu/page/softder/fetch.html">http://www.dartmouth.edu/page/softder/fetch.html</a>
Gopher:	
Gopher User's Guide	<a href="ftp://boombox.micro.umn.edu/pub/gopher/docs">ftp://boombox.micro.umn.edu/pub/gopher/docs</a>
TurboGopher	<a href="http://boombox.micro.umn.edu/hh/gopher/">http://boombox.micro.umn.edu/hh/gopher/</a>
Virtual libraries:	
EBI BioCatalog	<a href="http://www.ebi.ac.uk/biocat/biocat.html">http://www.ebi.ac.uk/biocat/biocat.html</a>
WWW virtual library	<a href="http://www.golgi.harvard.edu/biopages/all.html">http://www.golgi.harvard.edu/biopages/all.html</a>
Molecular Biology E-mail servers	<a href="ftp://expasy.hcuge.ch/databases/info/serv_ema.txt">ftp://expasy.hcuge.ch/databases/info/serv_ema.txt</a>
Molecular Biology FTP servers	<a href="ftp://expasy.hcuge.ch/databases/info/serv_ftp.txt">ftp://expasy.hcuge.ch/databases/info/serv_ftp.txt</a>
Pedro's Biomolecular Research tools	<a href="http://www.public.iastate.edu/~pedro/research_tools.html">http://www.public.iastate.edu/~pedro/research_tools.html</a>
Push service:	
Point Cast	<a href="http://www.pointcast.com">http://www.pointcast.com</a>
Netscape channels	<a href="http://home.netscape.com/netcenter/cf/index1.html">http://home.netscape.com/netcenter/cf/index1.html</a>
Microsoft channel guide	<a href="http://www.lechannelguide.com">http://www.lechannelguide.com</a>
Mailing list	<a href="http://www.tile.net/">http://www.tile.net/</a>
Newsgroups	<a href="http://www.dejanews.com">http://www.dejanews.com</a>
Guide to search engines	<a href="http://searchenginewatch.com">http://searchenginewatch.com</a>
How to use web search engines	<a href="http://www.monash.com/spidap4.html">http://www.monash.com/spidap4.html</a>
Navigating the web with	<a href="http://www.albany.edu/library/internet/navigator.html">http://www.albany.edu/library/internet/navigator.html</a>
Databases of FAQs	<a href="http://ps.superb.net/FAQ/">http://ps.superb.net/FAQ/</a>

general form [mksin149@yahoo.com](mailto:mksin149@yahoo.com), denoting the name and mail server of the addressee separated by the @ ('a') sign. Not only text, but also photographs, images, sound and video samples can be attached to an e-mail message.

### FTP

The file transfer protocol (ftp) was developed by the scientific community; it is specifically designed to transfer data files over the Internet. Freeware-programs such as WS\_FTP are available to enable this form of file transfer. Access to an ftp-server can be limited by a password or can be freely accessible ('anonymous' ftp).

### CONNECTING TO THE INTERNET

A powerful computer and a modem (machine that enables digital information transfer over a telephone line) are indispensable. There are several ways to gain access to Internet. Most universities and research centres have direct access to the Internet backbone. For private use, one has to look for an Internate Access Provider (IAP). This is a commercial company that provides access to its Internet backbone network. Connection with the customer is usually established via a modem and a communication line. Analog telephone lines are mostly used for private use. New developments such as ISDN

(Integrated Services Digital Network), ATML (Asynchronous Transfer Mode Line) and cable TV services will enable much greater bandwidth for private use in the near future. Apart from the necessary software, the subscriber is given a password and an e-mail address. Most providers also offer the opportunity to install web pages on their server.

### SEARCHING THE INTERNET

Because of the enormous content of the 'world wide web', it is important to know how to search the web effectively to avoid wasting time and obtain maximum information. The easiest way is, of course, trying to obtain the exact URL. Most of the time, however, the exact address will be unknown. The secret of advance searching is simple: ask the right question. It may seem obvious, but it is not always easy and it needs a two-pronged attack. First, one has to be specific about what one is looking for, and second, is pick the search tool best suited for the job. Selecting a search tool begins with a simple choice: directory or search engine. The main difference between a search engine and a directory is that of automation. Databases of search engines are built and maintained by 'spider' software programs that trawl the web indexing the contents of web servers and following links on the pages found with the minimum of human involvement. Directories are built by the

user, doing pretty much what the spiders do, though at a much slower pace, but with a human's ability to evaluate what a web page is really about and index it accordingly.

Selecting and accessing a directory is possible when there is little doubt that the information exists, and one would rather sort through a few well-aimed links than tens of thousands of general ones. One should use a search engine when looking for a niche topic as a specific fact that is unlikely to have an entire page or site devoted to it, or links to as many related pages as possible. There are many search engines and each has its own method of gathering and sorting data, producing a different set of results from the same query. A list of search engines is given on Table II. As there is no surety on which of the 1400 available engines will give you the link to the information you need, the most elusive information is best tackled with a meta search site. Meta search engine involves multiple search engines simultaneously and then displays the results from each on a single page. Dogpile ([www.dogpile.com](http://www.dogpile.com)) can be used for fast, reliable meta searching. We performed a search for 'Gastroenterology' in Dogpile. The search engine 'Looksmart' found 74 documents, search engine 'Go To.com' found 10 or more documents, where as 'Dogpile' web catalog found 2,575 documents.

### **GASTROENTEROLOGY ON THE INTERNET**

A large and rapid growing volume of medical information can be found on the web. In the field of Gastroenterology, the Internet offers the ability to: (i) read and send world wide electronic mail, (ii) join mail list and discussion groups, (iii) visit hospitals and universities, (iv) read on-line journals, textbooks (including graphs, photographs, video samples etc.) and database (such as MEDLINE) on gastroenterology (v) consult professionals and commercial organisations, and (vi) obtain information about postgraduate courses, symposia, research and job opportunities.

There are many databases available on Internet that may be very useful not only to Gastroenterologists but people from other medical and science streams. One example is MEDLINE, which is a large database with abstracts of all medical articles that appear in the international refereed medical journals. MEDLINE (MEDlars onLINE) is the National Library of Medicine's (NLM) premier bibliographic database covering database covering the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and the pre-clinical sciences. The MEDLINE file contains bibliographic citations and author abstracts from approximately 3,900 current biomedical journals published in 70 countries. The file contains approximately 9 million records dating back to 1996. Coverage is worldwide, but most records are from English - language sources or have English abstracts. Each MEDLINE record is identified with a unique identifying number called a MEDLINE UID (MUID in PubMed). Citations for MEDLINE are created by National Library of Medicine, International MEDLARS partners, and the co-operating professional organisations. MEDLINE records are incorporated into PubMed (<http://www.ncbi.nlm.gov/PubMed/>) weekly, and are also assigned a PubMed unique identifier (PMID). A

Table II. List of search engines

<b>Search Engines:</b>	
Yahoo	<a href="http://www.yahoo.com">http://www.yahoo.com</a>
Exite	<a href="http://www.exite.com">http://www.exite.com</a>
In-foseek	<a href="http://www.infoseek.com">http://www.infoseek.com</a>
Alta Vista	<a href="http://www.altavista.digital.com">http://www.altavista.digital.com</a>
Looksmart	<a href="http://www.looksmart.com">http://www.looksmart.com</a>
Hot Bot	<a href="http://www.hotbot.com">http://www.hotbot.com</a>
Lycos	<a href="http://www.lycos.com">http://www.lycos.com</a>
Northern Light	<a href="http://www.nlsearch.com">http://www.nlsearch.com</a>
<b>Meta Search Engines:</b>	
Dogpile	<a href="http://www.dogpile.com">http://www.dogpile.com</a>
Eliter.com	<a href="http://www.eliter.com">http://www.eliter.com</a>
The BigHub.com	<a href="http://www.thebighub.com">http://www.thebighub.com</a>
JUGALUG MP3	<a href="http://www.jugalug.com/">http://www.jugalug.com/</a>
CurryGuide	<a href="http://services.curryguide.com/">http://services.curryguide.com/</a>
PopularSites.com	<a href="http://www.popularsites.com">http://www.popularsites.com</a>
Megasources	<a href="http://www.acr.ryerson.ca/~journal/megasources.html">http://www.acr.ryerson.ca/~journal/megasources.html</a>
<b>Indian Search Engines</b>	
123 India	<a href="http://www.123India.com">http://www.123India.com</a>
Agni	<a href="http://www.indiawatch.org.in/agni/">http://www.indiawatch.org.in/agni/</a>
India Search	<a href="http://www/indialinks.com/links/links.htm">http://www/indialinks.com/links/links.htm</a>
Khoj	<a href="http://www.khoj.com">http://www.khoj.com</a>
Yadoo	<a href="http://www.jadoo.com">http://www.jadoo.com</a>
Indian Homepage Search Engine for India	<a href="http://indiatime.com/urls/indiaurls.htm">http://indiatime.com/urls/indiaurls.htm</a> <a href="http://search.keralanuada.com/internet-services/">http://search.keralanuada.com/internet-services/</a>

selection of Internet resources relevant to gastroenterology is given in Table III. Care has been taken to check the accuracy of the information given. Because of the volatile nature of the Internet, however, no absolute guarantee can be given for the URL's provider.

### **IMPACT OF INTERNET**

Until recently, many feared that increased use of the Internet would further widen the knowledge gap between industrialised and developed countries. But such pessimism has given way to optimism with the hope that this new technology may instead help spur a renaissance of science and technology in poorer countries. Use of the Internet in developing countries is now growing faster than developed ones. According to a report from the International Data Corporation, the number of users in the Asia-Pacific region will grow from 6.5 million last year to 29.3 million in 2001. Widespread access to the Internet allows scientists to use a vast range of tools, literature and databases. It promises to offset the drop in journal acquisitions by libraries in developing countries that has occurred over the past decade because of inflation. Many journals are now made available online, which have lowered the prices and cost of distribution than the print versions. Moreover, many organisations are now helping universities and learned societies publish on the web at low cost. One such organisation is High Wire Press, a not-for-profit body set by Stanford University ([hwmg.stanford.edu/developing.html](http://hwmg.stanford.edu/developing.html)).<sup>3</sup>

Medical professionals are not the only ones searching the Internet for information. Our patients have the same capability to do research on a medical topic thoroughly via Internet. However, of concern is the quality of this newly gained

Table III. List of important website addresses related to gastroenterology

**Professional Organisations**

American College of Gastroenterology  
 American Gastroenterological Association  
 American Society of Gastroenterological Endoscopy  
 American Society for Gastrointestinal Endoscopy  
 American Association for the Study of Liver Diseases  
 Canadian Association of Gastroenterology  
 Commonwealth Association of Paediatric Gastroenterology and Nutrition  
 Chesapeake Society of Gastroenterology Nurses and Associates  
 OMEG Organisation Mondiale de Gastro-Enterologie  
 (World Organisation of Gastroenterology)  
 Philippines Society of Gastroenterology  
 Society of Gastroenterology Nurses and Associates  
 Society of American Gastrointestinal Endoscopic Surgeons (SAGES)  
 The American Society of Colon and Rectal Surgeons  
 Texas Society of Gastroenterology and Endoscopy  
 United European Gastroenterology Federation  
 United European Gastroenterology Federation

<http://www.acg.gi.org/>  
<http://www.gastro.org/>  
<http://www.asge.org/index.jsp>  
<http://www.asge.org>  
[http://www.healthfinder.gov/text/orgs/hr\\_1943.htm](http://www.healthfinder.gov/text/orgs/hr_1943.htm)  
<http://www.gi.ucalgary.ca/>  
<http://www.capgan.org/>  
<http://www.csgna.org/>  
<http://www.omeg.org/>

<http://www.psgpsde.com.ph/psg.html>  
<http://www.sgna.org/>  
<http://www.sages.org>  
<http://www.fascrs.org/>  
<http://www.texmed.org/socs/soclist/tsge.htm>  
<http://www.uegf.org/>  
<http://www.uegf.org/>

**Journals**

American Journal of Gastroenterology  
 Alimentary Pharmacology and Therapeutics  
 Diseases of the Colon & Rectum  
 Gut  
 Gastrointestinal Endoscopy  
 The American Journal of Physiology  
 Current Opinion in Gastroenterology  
 Digestive of the Colon & Rectum  
 European Journal of Gastroenterology and Hepatology  
 Gastroenterology  
 Gastroenterology Journal of Mexico (Revista de Gastroenterologia de Mexico)  
 Gastrointestinal Endoscopy  
 GEN-Journal of the Venezuelan Gastroenterology Society  
 Helicobacter  
 Illustrated Case Reports in Gastroenterology  
 Journal of Gastroenterology and Hepatology  
 Journal of Gastrointestinal Surgery  
 Journal of Pediatric Gastroenterology and Nutrition  
 Neurogastroenterology & Motility  
 Scandinavian Journal of Gastroenterology  
 Hepato-Gastroenterology  
 Internet Journal of Surgery  
 Digestive Surgery  
 Journal of Image guided Surgery

<http://www-east.elsevier.com/ajg/>  
<http://www.blacksci.co.uk/products/journals/apt.htm>  
<http://www.discolrect.com/>  
<http://gut.bmjournals.com/>  
<http://www.asge.org/index.jsp>  
<http://ajpgi.physiology.org>  
<http://www.chapmanhall.com/ga/default.html>  
<http://www.wwilkins.com/DCR/>  
<http://www.chapmanhall.com/gh/default.html>  
<http://www.gastrojournal.org/>  
<http://www.imbiomed.com.mx/Gastro/Inicio.html>  
<http://www.asge.org/publication/gijourn.html>  
<http://www.sovegastro.com.ve/revista.htm>  
<http://www.blacksci.co.uk/products/journals/xheli.htm>  
<http://www.chapmanhall.com/ic/default.html>  
<http://www.blacksci.co.uk/products/journals/xjgh.htm>  
[http://www.qmp.com/gastro\\_journal.html](http://www.qmp.com/gastro_journal.html)  
<http://www.lrpublish.com/journals/j1013.htm>  
<http://www.blacksci.co.uk/products/journals/ngem.htm>  
<http://193.69.40.2/journals/en/j-304.html>  
<http://www.thieme.com>  
<http://www.ispub.com/journals/ijs.htm>  
<http://www.karger.ch/journals/dsu/dsudes.htm>  
<http://www.igs.wiley.com:80/index.html>

[http://www.luz.ve/ICA/Atlas\\_med/i\\_index.html](http://www.luz.ve/ICA/Atlas_med/i_index.html)  
<http://www.mindspring.com/~dmmdm/>  
<http://www.geocities.com/HotSprings/1672/>  
<http://www.mic.ki.se/Diseases/c6.html>  
<http://www.e-gastroped.com.br/>  
<http://www.gastro.net.au/>  
<http://www.gastronews.com/>  
<http://www.pds.med.umich.edu/users/greenson/>  
<http://www.gastrosite.com/>  
<http://www.ginet.com/>  
[http://www/il-st-acad-sci.org/health/Gastrostomy\\_Support](http://www/il-st-acad-sci.org/health/Gastrostomy_Support)  
<http://www2.arcade.uiowa.edu/hardin-www/md-gastro.html>  
<http://www.execpc.com/iffgd/>  
[http://www.vh.or/Providers/Teaching\\_Files/Endoscopic/Endoscopic.html](http://www.vh.or/Providers/Teaching_Files/Endoscopic/Endoscopic.html)  
<http://www.excerptamedica.com/omge/>

**Other Links**

Atlas of Digestive Endoscopy (Anticancer League of Zulia State)  
 Atlas of Gastrointestinal Endoscopy  
 Cybermedicine-Gastroenterology  
 Digestive System Diseases (Karolinska Institute)  
 Electronic Gastroped  
 GastroNet Australia  
 GASTRO ONLINE  
 Gastrointestinal and Liver Pathology (University of Michigan)  
 Gastrosite (Glaxo Wellcome)  
 GI Net (Glaxo Wellcome)  
 Gastrostomy Support  
 Hardin Meta Direcotry - Gastroenterology (University of Iowa)  
 International Foundation for Functional Gastrointestinal Disorders  
 Pediatric Endoscopic Photos (Virtual Hospital)  
 World Gastroenterology News

**Speciality - Related Site**

**Stomach:**  
 Helicobacter Foundation  
 Digestive Disorders Associates  
 Stomach Cancer-Can We Prevent It?  
 Stomach Cancer - OncoLin  
 Stomach Cancer - Surgery

<http://www.helico.com/>  
<http://www.dda.net/>  
<http://www.bristolhospital.org/stomach.html>  
[http://oncolink.upenn.edu/disease/gastric/gastric\\_review.html](http://oncolink.upenn.edu/disease/gastric/gastric_review.html)  
<http://www.htriveonline.com/health/Library/Surgery/surgery60.ht>

- Stomach Cancer - The Daily Apple  
 Stomach Cancer Information  
 Gastric Cancer  
<http://thedailyapple.com/pages/DS3/Cancer/SHbdDC3.htm>  
[http://rex.nci.nih.gov/WTNK\\_PUBS/stomach/index.htm](http://rex.nci.nih.gov/WTNK_PUBS/stomach/index.htm)  
<http://oncolink.org/cancernet/96/oct/710065.html>  
<http://cancer.med.upenn.edu/cancernet/97/june/706065.html>
- Overview of Digestive Disease  
 Stomach Disease  
[http://www.gastronews.com/pat\\_info.dir/overview.html](http://www.gastronews.com/pat_info.dir/overview.html)  
[http://www.loc.gov/lexico/liv/Stomach\\_disease.html](http://www.loc.gov/lexico/liv/Stomach_disease.html)  
<http://www.ohsu.edu/clinweb/C6/C6.405.748.html>  
<http://www.cas.org/vocabulary/10002.html>  
<http://www.medlib.iupui.edu/hw/gastro/hwgeducation.html>  
<http://www.med.harvard.edu/countway/pubs>  
<http://www.ibismedical.com/~ibis/peptic.html>  
<http://www.nlm.nih.gov/pubs/cbm/pep ulcer.html>
- Digestive System Disease  
 Health Web:Atlas of Digestive Endoscopy  
 Digestive System
- Helicobacter Pylori in Peptic Ulcer Disease  
<http://www.innercleanse.com>  
<http://www.patient.medscape.com>  
<http://rattler.cameron.edu/liver/>  
<http://cancer.med.upenn.edu/disease/liver/>  
<http://liver.bsd.uchicago.edu>  
<http://www.powerup.com.au/~skin/biliary.htm>  
<http://liver.bsd.uchicago.edu>  
<http://livertx.org>  
<http://www.classkids.org>  
<http://www.livertransplant.org/>  
<http://www.ghltp.org>  
<http://www.show.scot.nhs.uk/sltu>  
<http://cpmcnet.columbia.edu/dept/gi/labtests.html>  
<http://cpmcnet.columbia.edu/dept/gi/disliv.html>  
<http://members.aol.com/chiagungo/profes/>  
<http://www.cx.unibe.ch/ikp/lab2/index.html>  
<http://sadioe.ucsf.edu/alf/alffinal/>  
<http://www.liverdoctor.com>  
<http://www.pds.med.umich.edu/users/greenson/>  
<http://www.livercancer.com/>  
<http://www.graylab.ac.uk/cancernet/201195.html>  
<http://sadioe.ucsf.edu/alf/alfinal/infolivercancer.html>  
<http://www.britishlivertrust.org.uk/>  
<http://www.hepnet.com/liver/index.html>  
<http://www.ddc.musc.edu/>  
<http://www/hepfi.org>  
<http://cpmcnet.columbia.edu/dept/gi/>  
<http://www.hepatologist.net>  
<http://www.gastro.com/liverpg/hepbvac.htm>  
<http://members.aol.com/VikkiSM/hepage.html>  
<http://www.hepnet.com/nih/contents.html>  
<http://pages.prodigy.com/hepc/>  
<http://www.livertransplant.org>
- Liver*  
 Liver Cleansing  
 Liver & Gallbladder Disorders  
 Living with Liver Cancer  
 OncoLink: Liver Cancer  
 University of Chicago Medical Center Liver Study Group  
 Biliary Atresia & Paediatric Liver Transplant Support Group  
 Liver Study Unit  
 Children's Liver Alliance  
 Children's Liver Association for Support Services  
 USC Liver Transplant Program and Center for Liver Disease  
 Greater Houston Liver Transplant Partnership  
 Scottish Liver Transplant Unit  
 Common Laboratory Tests in Liver Diseases  
 Alphabetical list of liver diseases  
 Liver Diseases  
 Novel Approaches to Treatment of Liver Diseases  
 American Liver Foundation  
 Liver Cleansing Diet  
 Gastrointestinal and Liver Pathology  
 Liver Cancer Network  
 Adult Primary Liver Cancer  
 Cancer of the Liver  
 British Liver Trust  
 HepNet  
 Medical University of South Carolina Digestive Disease Center  
 Hepatitis Foundation International  
 Information on gastrointestinal liver and nutritional disorders  
 Hepatologist.net  
 Hepatitis B Vaccination  
 Hepatitis Mutual Support-information on treatments  
 Management of Hepatitis C  
 Focus: On Hepatitis C International  
 USC Liver Transplant Program and Center for Liver Disease
- Gallbladder*  
 Gallbladder Diseases  
<http://www.ohsu.edu>  
<http://www.gallbladder.net>  
<http://www.surgeries.com/gallblad.shtml>  
<http://www.stayhealthy.com/hrd/Subcategory.cfm?P=16>  
<http://www.chorus.rad.mcw.edu>  
<http://www.icarus.med.utoronto.ca>  
<http://www.cancer-info.com/gallblad.htm>  
<http://gallbladdercancer.treatment-cancercenter.com/>  
<http://www.goldcoast-onlin.com/goldcoast/565.html>  
<http://www.gallbladdercancer.certifiedwebnet.net/>  
<http://cancer.med.upenn.edu/disease/gallbladder/>  
<http://icarus.med.utoronto.ca/mnw7/gallbladder.htm>  
<http://gallbladdercancersymptoms.iseach-women.com/>  
[http://www.facs.org/about\\_college/acsdept/cancer\\_dept/pro](http://www.facs.org/about_college/acsdept/cancer_dept/pro)  
<http://reston.carsoninc.com/database/Cancernet/Cancerlit/>  
<http://imsdd.meb.uni-bonn.de/cancernet/201186.html>  
<http://www.graylab.ac.uk/cancernet/101186.html>  
<http://www.cancergroup.com/em18.html>  
<http://www.telcom.net/securecancergroup/em18.html>
- Gall Bladder Center - Stayhealthy.com  
 Porcelain Gallbladder  
 Gallbladder Cancer
- Latest Gall-Bladder Cancer Treatments  
 How to Treat Gallbladder Cancer

OncoLink:Cancer of the Gallbladder FAQs  
 OncoLink:NCI/PDQ Physician Statement: Gallbladder cancer  
 Mortality from Biliary Tract Cancer  
 Gallbladder Malignant fibrous histiocytoma  
 Laparoscopic Electro-dynamic removal of Gallbladder  
 Gallstone Removal  
 Treatment of Gallstone  
 Cholecystectomy  
 Medical Links: Gall Bladder Disease  
 Health tips - Gall Bladder Stone Flush  
 The GASTROLAB Image Gallery  
 Gallstones  
 Gall bladder Removal  
 NIH Consensus Statements: Gallstones and Cholecystectomy  
 News Release: Gallstones and Laparoscopic Cholecystectomy  
 Medline Review

<http://oncolink.org/disease/gallbladder/faq>  
[http://cancer.med.upenn.edu/pdq\\_html/1/eng/101186-4.html](http://cancer.med.upenn.edu/pdq_html/1/eng/101186-4.html)  
<http://www.bcasj.or.jp/jjcr/abstracts/v89/g15.htm>  
<http://www.anaturalchoice.com>  
<http://www.ledc.com>  
<http://www.sensiblehealth.com>  
<http://infoward.com/cpg/sadb/acp/acptral12.htm>  
<http://www.bioscience.org/atlas/tumpath/gitract/gallblad/1/1.html>  
<http://yarmouth.org/ps/links/g/gbladder/>  
[http://skali.com.my/health/hts/199907/07/hts19990707\\_01.html](http://skali.com.my/health/hts/199907/07/hts19990707_01.html)  
<http://www.gastrolab.net/mg042.htm>  
<http://www.menshealth.com/features/mensconf/docs/doc20.html>  
<http://www.medicaltalk.com/7213.html>  
<http://examroom.medscape.com/govmt/NIH/1999/guidelines/NI>  
[http://odp.od.nih.gov/consensus/news/releases/909\\_release](http://odp.od.nih.gov/consensus/news/releases/909_release)  
<http://medscape.com/SCP/CIS/1995/v14.n03/s882.gorden/Lit>

#### *Pancreas:*

Insulin-Free World Foundation  
 Pancreas cancer web  
 Johns Hopkins Pancreas Cancer Web  
 Questions & Answers - Pancreatic cancer  
 National Familial Pancreas Tumor Registry  
 Sugarbaker Oncology Associates, P.C

<http://www.insulin-free.org>  
<http://www.path.jhu.edu/pancreas>  
<http://www.path.jhu.edu/pancreas>  
<http://www.sterner.org/~dsterner/pancreas/mdapanqa/panqacov.h>  
[http://128.220.8541/PANCREAS\\_NEPTR](http://128.220.8541/PANCREAS_NEPTR)  
<http://www.surgicaloncology.com>

#### *Colon:*

Colon Connections  
 Colon Cancer Information Center  
 Northwest Colon and Rectal Clinic  
 new\_colon\_and\_rectal\_clinic  
 Diseases of the Colon & Rectum  
 American Society of Colon and Rectal Surgeons  
 International Association of Colon Hydrotherapy  
 Colon Cancer Information from Memorial Sloan-Kettering  
 Hereditary Colon Cancer Newsletter  
 Score Against Colon Cancer  
 Colon Cancer Alliance  
 East Tennessee Colon & Rectal Surgical Associates  
 Savannah Colon and Rectal Surgery  
 Colon & Rectal Surgical Associates of Long Island (CRSA)  
 Colon, Gallbladder, Gastric Cancer

<http://rattler.cameron.edu/colon/>  
<http://www.meds.com/colon/colon.html>  
<http://ourworld.compuserve.com/homepage/>  
<http://www.discolrect.com/>  
<http://www.fascrs.org/>  
<http://www.healthy.net/pan/pa/iact/index.html>  
<http://www.mskcc.org/document/WICcolon.htm>  
<http://www.mdacc.tmc.edu/~hcc/>  
<http://www.scorecrc.com/>  
<http://www.ccalliance.org>  
<http://www.etcrcs.com/>  
<http://www.savannah-crs.com/>  
<http://www.colonandrectalcare.com>  
<http://sageunix.uvm.edu/dana/vtchip/type.htm>

#### *Endoscopy:*

American Society of Gastrointestinal Endoscopy  
 Dandenong Gastroenterology and Private  
 Endoscopy Waverly Endoscopy  
 Smith & Rea Digestive Health and Rock creek Endoscopy  
 Gastroenterology and Gastrointestinal Endoscopy  
 Endoscopy Centre at the National University of Singapore  
 Society of Gastroenterology Nurses and Associates (SGNA)  
 Endoscopic Images - atlas of digestive endoscopy  
 My Endoscopy Procedure - a personal experience

<http://www.asge.org/>  
<http://www.gutdoc.com>  
<http://www.ozziweb.net.au/we>  
<http://www.smithrea.com/>  
<http://minf.vub.ac.be/~leo/index.html>  
<http://www.endosurgery.com.sg>  
<http://www.sgna.org>  
<http://www.areamedica.com>  
<http://www.telarama.com/~pall/endoscopy.htm>

#### *Endoscopy accessories /manufacturer/repairing and reconditioning:*

Integrated Endoscopy, Inc.  
 Mill-Rose Laboratories Inc.  
 Pentax Precision Instrument Corporation  
 PriMed Instruments Inc.  
 Microvasive Endoscopy  
 American Endoscopy Services, Inc.  
 American Medical Endoscopy, Inc.  
 World Endoscopy  
 United Endoscopy  
 HMB Endoscopy Products  
 Medi Vision Scope Service Center  
 BGSM Virtual Endoscopy Center  
 Integrated Endoscopy, Inc.

<http://www.integratedendoscopy.com>  
<http://www.mrlabsinc.com>  
<http://www.pentaxmedical.com/>  
<http://www.primedstruments.com>  
<http://www.mve.bsoci.com>  
<http://www.americo-endoscopy.com/impexp/>  
<http://www.endoscopes.net>  
<http://www.worldendoscopy.com>  
<http://www.endoscope.com/>  
<http://www.hmbendoscopy.com/>  
<http://www.medivision-net.com/>  
<http://www.vec.bgsm.edu/>  
<http://www.integratedendoscopy.com>

*Surgical forums and discussion group:*

Details information on SURGINET:

Colon cancer discussion among patients, their families and caregivers:

Hepatitis support:

Open forum for Alimentary Tract Surgeons:

<http://www3.sympatico.ca/tgilas/SIRGINET.FAQ.htm>

[lister@maelstrom.stjohns.edu](mailto:lister@maelstrom.stjohns.edu)

[lister@maelstrom.stjohns.edu](mailto:lister@maelstrom.stjohns.edu)

<http://www.ssat.com/ssat.htm>

*Miscellaneous:*

Free Medline - access

Online Atlas of Surgery

Ethicon Endosurgery

MedWebPlus: Hepatology and Gastroenterology

Gastroenterology Online: Policy and Position statements

<http://healthgate.com/HealthGate/Medline>

<http://www.bgsu.edu/surg-sci/atlas/atlas.html>

<http://www.surgeonsforum.com>

<http://www.medwebplus.com>

<http://www.wbsaunders.com>

*Gastroenterology Consultants:*

G I Consultants

Gastroenterology Consultants

Columbia University Gastroenterology

Rocky Mountain Gastroenterology Associates

Gastroenterology Associates Home page

Bergan Gastroenterology Internal Medicine

Gastroenterology and Liver Associates

Atlantic Gastroenterology Associates

Gastroenterology centre of the Mid-South

Gastroenterology Associates at the Summit

Great Cincinnati Gastroenterology Association, Inc.

<http://www.giconsultants.com>

<http://www.gastro.com>

<http://cpmcent.columbia.edu/dept/gi/>

<http://www.coloradogi.com>

<http://www.giassoc.com>

<http://www.bergengastro.com>

<http://www.galadoc.com>

<http://www.aga-asa.com>

<http://www.memphisgicentre.com>

<http://www.gisummit.com>

<http://www.cintigastro.com>

knowledge. Free flow of information on the Internet permits anyone with good computer skills and a modem to establish a web site with whatever information they wish to share. In this respect, the Internet has become the great equaliser: experts, specialists, authorities, professionals, alternative therapy promoters, interested lay people, hucksters, all may set up sites containing information on specific topics of interest. Most physicians are concerned whether medical information found in the Internet by patients is current and accurate. In the medical literature, the distinguishing characteristic of reputable and scientifically useful information is peer review; this process assures readers the publication has been scrutinised by acknowledged experts for their opinion and recommendations.<sup>4,5</sup> The lay public for the most part is unaware of the peer review process as well as the degree of scrutiny to which published medical material has been subjected. Although the form of peer review may differ from journal to journal, it is generally accepted that research studies submitted to peer review would be presented in such a way that potential users could assess observations, replicate the study experiments, and evaluate the authors' conclusions.<sup>6</sup> Readers of peer-reviewed articles thus are reasonably assured that the data in such articles are scientifically valid and the conclusions drawn by the authors are sound. On the other hand a recent study on Ewing sarcoma in Internet<sup>1</sup> showed that some sites contained so outdated information as to be erroneous. Few sites provided partially misleading information. The factually incorrect and misleading web pages found in their study were particularly disturbing.

Although misleading or inaccurate information may be present in a small number of web pages the Internet has the potential to be helpful to both physicians and patients. Volumes of appropriate, accurate and peer-reviewed information contained on web pages are present, and previous difficult

information distribution issue now can be relieved. The Internet can be a powerful, positive partner to the health care provider in patient education. Better health care results when patients are more informed regarding their disease and become more involved in participating in the choice of their treatment.

**CONCLUSION**

The modern Gastroenterologist cannot afford to ignore the Internet anymore. It is a rich source of valuable information that can be used to great advantage, for instance, in keeping up with recent developments in the fast moving discipline of Gastroenterology. Various useful databases already exist and many more are being added constantly. The future of gastroenterology is in the handling of information and to get connected in time.

Computer literacy and an Internet connection must be a part of postgraduate physician education to enable us to help our patients. The reality is that the Internet is here, growing, and will play an ever increasing role in health care. The best approach to coping with the reality is to be proactive and to recognise the opportunity that the Internet can provide for improvement of patient care.

**REFERENCES**

1. Biermann JS, Golladay GJ, Greenfield ML, VH, Baker LH. Evaluation of cancer information on the Internet. *Cancer* 1999;86:381-90.
2. Ceelen WP, Waele JD. Surgeons and the Internet. *Eur J Surg* 1999;165:83-6.
3. Butler D. Internet may help bridge the gap. *Nature* 1999;397:10-11.
4. American Medical Association Manual of Style, 8th Ed. Baltimore: Williams & Wilkins. 1989.
5. Anonymous. Guarding the guardians, research on editorial peer review. Selected proceedings from the First International on Peer Review in Biomedical Publication. May 10-12, 1989, Chicago. *JAMA* 1990;263:1317-1441.
6. Day RA. How to write and publish a scientific paper. 3rd Ed. Phoenix Oryx Press. 1988.