



Secundum Artem

Current & Practical Compounding
Information for the Pharmacist.

PHARMACEUTICAL COMPOUNDING RESOURCES ON THE INTERNET

GOALS AND OBJECTIVES

Goal: To provide compounding pharmacists supportive information on the use of the Internet in their professional practice.

Objectives: After reading and studying this article, the reader should be able to:

1. Discuss what the Internet is and its various components.
2. Describe different resources available to compounding pharmacists.
3. Determine the best search engines to use for drug information.
4. List various sites that can be used to obtain compounding information.

INTRODUCTION

The computer, networks and the Internet have changed the way we live, and especially the way we communicate. Each day, millions of transactions occur over hundreds of thousands of connections throughout the world. Only seconds are required to transmit hundreds of pages of information; pages including text and/or images. For the millions that use the Internet daily, traditional limitations of time and distance no longer apply. One can conduct transactions and transfer information as easily in Europe as across the street. With the increase in the number of overnight delivery services, products can be delivered anywhere within the US overnight and throughout the world within a matter of just a few days.

The technologies of the telephone, computer and media (television, radio, etc.) are converging to form a single information/communication system that will ultimately serve the world. Many businesses have already taken advantage of this technology; some are flourishing and some are floundering. The healthcare industry has achieved great success in implementing computer and Internet technologies ranging from business to clinical to professional applications. In recent years, pharmacy has increased its

utilization of the Internet technologies and is making new changes daily.

The Internet offers many services and opportunities for the compounding pharmacist, as detailed in this issue. However, many pharmacists are not taking advantage of technologies that can revolutionize and update their practice. The purpose of this issue is to introduce compounding pharmacists to the use of the Internet in their compounding practices. It is time now for all pharmacies to have an online, dedicated computer attached to the Internet.

WHAT IS THE INTERNET

The Internet is a matrix of networks and computer systems linked together around the world.¹ It is a collection of computer networks operating under a set of universal rules called "protocols". These networks have no political boundaries on the exchange of information. These networks are actually connected by gateways that enable one type of network to "talk" to a different type of network. We use the term "Internet" to describe the largest of these different networks in terms of the number of sites interconnected and the num-

ber of users.

The Internet is actually a collection of multiple components, including e-mail, the World Wide Web, USENET newsgroups and others. The World Wide Web (WWW, W3) is the branch of the Internet that consists of a system of interlinked documents; these documents can include text, graphics, sound, movies and even links to other services, sites or documents.² The WWW has been described as the first coherent unifying mechanism for Internet users and has been described as the key to the growth and popularity of the Internet.

GENERAL USES OF THE INTERNET

The Internet has been described as the world's largest library that can be accessed by any user. The Internet is primarily used today for transmitting information in the form of e-mail, data and files, including text and graphics. Data, including text and numbers, can be rapidly transmitted, with graphics taking a little more time. Online searches of databases are easily done to obtain information to satisfy a request or a query. Some of the sites actually allow one to print the copy of the article of interest.

PHARMACEUTICAL COMPOUNDING AND THE INTERNET

Pharmacists use the Internet primarily for obtaining information in response to questions received. Online searches are commonly done, and will be explained further later. Electronic mail (E-mail) is routine for many pharmacists. E-mail is an easy and efficient method to handle communications. One generally does not have to worry about the other party being present to pick up the telephone or of interrupting a meeting. The e-mail is waiting for the recipient when they have a moment to read and respond to it. Information can be transmitted as either straight typed-in text or attached as a file (including graphics).

Telephone answering machines/services are commonly used today for patients requesting refills as well as for physicians to dictate new prescriptions. E-mail can also be used more efficiently. For a telephone request, the information must be copied down to initiate a prescription or a refill. Using e-mail by simply printing out the e-mail request will initiate the prescription or refill thus saving a lot of time when dealing with multiple refills. It can save physicians time as they can simply have a file listing the prescriptions they usually prescribe and the patients can have files of their prescription numbers that can be transmitted to the pharmacy. Many physicians and pharmacies are already using electronic prescribing.

In using e-mail, the contact is noninvasive and takes much less actual "contact" time than via a telephone. A telephone call may take 6-10 minutes, whereas keying in an e-mail message may only take 1-2 minutes followed by later reading or printing out the response, which may take a minute or so. The key is to inform all parties of your desires and wishes for them to use the Internet.

Information can be provided to patients via the Internet. For example, when a prescription is dispensed (especially via regular mail or express delivery), the counseling information can also be transmitted electronically, to supplement and reinforce the written information. This is also a great way to handle questions from patients. The patient simply e-mails the pharmacy the questions and pharmacy personnel respond as time allows throughout the day.

When contacting a physician's office for a refill request, the e-mail/refill requests go directly either to the physician/prescriber or other healthcare personnel. Their response using the "Reply" feature is easy, efficient and convenient.

ONLINE SEARCHES, SEARCH ENGINES AND THE INTERNET

Online searches are commonly used to obtain information that is needed for a specific purpose. These searches may include information on specific drugs, diseases, therapies, side effects, interactions, formulas for compounded prescriptions and regulatory information.

There are many search engines on the Internet; some are significantly more efficient and complete than others. As an example, the number of hits for the term "compounding pharmacy" ranged from 0 to 3,020 using different search engines. Oftentimes, it is necessary and wise to use more than one search engine to obtain the desired information.

Recommended Search Engines

Recommended search engines include Yahoo, Excite, Google, NorthernLight and Dogpile.

Other Search Engines

Other useful search engines include Alta Vista, InfoSeek, Lycos, HotBot, Magellan, WhatIs, WebCrawler, All-in-One Search, Internet Sleuth, c/net SEARCH, All the Web, AccuFind, Netscape Search and Liszt.

Other Related Search Instruments

"HONselect" is a healthcare search integrator that was developed by the Health On the Net Foundation. It translates free text search terms into MESH terms, provides the user with a concept hierarchy of terms to modify the search, then searches against several databases, including MEDLINE.

LISTSERVS

ListSers are great for getting answers to questions. A ListServ is a group of individuals that have basically agreed to share information among their members. When one member has a question, it is sent out via e-mail to all members on the list. As responses are made, the responses go to all members of the ListServ so they all are aware of the responses to the questions. Some ListSers are available only to the membership of specific organizations but can easily be set up among groups of interested individuals. A list of currently

available pharmacy related ListSerts is available at:
<http://www.pharmacy.org/lists.html>

REGULATORY

FDA Center for Drug Evaluation and Research
<http://www.fda.gov/cder/pharmcomp/default.htm>
This website has been created so readers can follow the Agency's activities as it implements Section 127 of the FDA Modernization Act of 1997 on the practice of pharmacy compounding. Many documents are available for reading and printing. It is divided into the FDA Modernization Act, Guidance for Industry, Pharmacy Compounding Committees, Pharmacy Compounding Advisory Committee Meetings, Federal Register Notices, Regulations, Public Comments on Pharmacy Compounding and Links to Other Information.

Pharmacy Compounding Customizes Prescription Drugs
http://www.fda.gov/fdac/features/2000/400_compound.html
This site contains a FDA Consumer magazine featuring an article on the pharmacy compounding laws.

USFDA CDER Drug Information-Drug Shortages
<http://www.fda.gov/cder/drug/shortages/>
This website is used to alert health care professionals to drug shortage situations. The site lists current drug shortages, products experiencing limited distribution, resolved drug shortages, how to report a drug shortage and includes a drug shortage manual of policies and procedures. The tabular information provides the drug name, company information, reason for the shortage and other related information.

U.S. Patent and Trademark Office
<http://www.uspto.gov>
This website is the only official web site of the United States Patent and Trademark Office. It can be used to search patents and trademarks, order copies, apply for patents, register trademarks, pay fees and monitor the progress of a patent or trademark application. Compounding pharmacists can use this site to check the current status of a patent or to determine whether or not a product or its use is covered under an issued patent. Users can download free copies of patents. The site can be easily accessed and searched using patent numbers, authors or subjects.

U.S. Pharmacopeia
<http://www.usp.org>
The USP helps to ensure that consumers receive medicines of the highest possible quality by setting the standards that manufacturers must meet to sell their products in the U.S. As the world's most highly recognized and technologically advanced Pharmacopeia, the USP provides standards for more than 3,700 medicines, dietary supplements and dosage forms. For compounding, the USP contains the

Pharmacy Compounding Chapter <795>, Sterile Products Compounding Chapter <1206> and numerous other chapters related to compounding activities as well as official monographs/formulas for compounding; these formulas have been subjected to extensive stability testing and each preparation has an assignable beyond use date. This site also provides information about the numerous services and information provided by the U.S. Pharmacopeia and National Formulary.

MATERIAL SAFETY DATA SHEETS

<http://www.hazard.com/msds>
MSDS sheets are available directly from the manufacturer with an alphabetical listing by manufacturer's name. One can search for MSDS sheets with only partial data, and chemical toxicity reports (toxicology reports). The site provides links for other MSDS databases and computer software available for purchase.

<http://www.msdssearch.com>
This site provides a free electronic connection between manufacturers, distributors, customers, government agencies, transporters, and emergency responders in a single international database. It provides background information on MSDS sheets, links to government/organizational sites, and detailed software descriptions and purchasing information.

<http://www.ilpi.com/msds>
This site provides links to over 85 free sites to find complete MSDS information. It outlines government agency regulations and gives interpretations regarding MSDS sheets. It contains information on companies that supply MSDS sheets with address, phone, and e-mail links.

<http://www.msdsonline.com>
This website touts itself as being the "single source" for all your MSDS needs. It offers mainly software packages containing the information to manage your MSDS needs locally on a desktop or PC, giving you around the clock access to their MSDS database, with prices ranging from \$14-\$30 per month.

<http://www.msdsolutions.com>
This is a free comprehensive database of 515,000 current MSDS files from over 8,000 manufacturers worldwide in easily accessed and downloadable PDF or HTML files. Users must register after 30 days but usage is free.

LITERATURE SEARCHES ON THE INTERNET

BioMedNet
<http://www.bmn.com>
This site provides resource links for databases-Medline, journal collections, books and laboratory equipment, jobs, and web links to over 3,500 evaluated biomedical websites. Membership is free but access to some full-text articles may require a fee.

Grateful Med

<http://igm.nlm.nih.gov/>

This site offers assisted searching in 15 different databases including Medline. It offers direct links to full text of clinical practice guidelines. Grateful Med is being retired and has not been updated since December of 2000. It will be replaced by the new NLM Gateway.

PubMed

<http://www4.ncbi.nlm.nih.gov/PubMed/>

This is a service of the National Library of Medicine and provides access to over 11 million citations from MedLine and additional life science journals, including links to sites providing full text articles and other related resources.

PHARMACY COMPOUNDING SUPPORT COMPANIES

Paddock Laboratories, Inc.

www.paddocklabs.com/publications/secundum/secindex.html

Paddock Laboratories is one of the country's leaders in providing compounding supplies and information. On this website is the actual text from the Secundum Artem series, a source of information concerning techniques and procedures for extemporaneous compounding.

Professional Compounding Centers of America, Inc. (PCCA)

<http://www.pccarx.com>

Part of this website is open to the public and part is available only to PCCA members.

Spectrum Pharmaceuticals

<http://www.spectrumrx.com>

On this website, is an "Ask our Pharmacist" feature where one enters their contact information and specific question, to which responses are received.

CONTRACT STERILIZATION FACILITIES

Steris Isomedix Services

<http://www.steris.com/steris/scientific/isomedix/processes/index.htm>

This site discusses the advantages and applications of both ethylene oxide and gamma sterilization of pharmaceuticals. They provide contract sterilization services using these as well as other methods. Technical questions can be submitted related to sterilization methods and contract sterilization services.

Surgical Technologies, Inc.

<http://www.surgicaltechnologies.com/steril.html>

Surgical Technologies, Inc. (STI) offers a wide range of sterilization processes and testing services custom-tailored to individual needs. Services include sterilization protocol development and validation, ETO sterilization, gamma sterilization, release testing, and others.

COMPOUNDING FORMULAS

<http://www.dal.ca/~pharmwww/compound/>

This site provides citations of compounding formulas from the recent literature, namely the International Journal of Pharmaceutical Compounding, American Druggist, Pharmacy Times and U.S. Pharmacist. The citations are ordered alphabetically by the first or main ingredient and, in some cases, by the indication or dosage form.

JOURNAL SITES ON THE INTERNET

International Journal of Pharmaceutical Compounding

<http://www.ijpc.com>

This website is dedicated to delivering contemporary data, facts, news and advice to healthcare practitioners globally.

Pharmacy Times

<http://www.pharmacytimes.com/com.shtml>

Provides practical information for today's pharmacist. Contains a compounding section, which lists several compounding formulas in alphabetical order and posts questions and answers regarding various compounding procedures.

ONLINE JOURNALS

International Journal of Pharmaceutical Compounding

<http://www.ijpc.com>

The Internet List of Online Journals

http://www-med.stanford.edu/medworld/research_journals.html

US Pharmacist

<http://www.uspharmacist.com>

Pharmaceutical Research

<http://www.aapspharmaceutica.com/scientificjournals/research/index.htm>

Journal of Pharmaceutical Sciences

<http://www.interscience.wiley.com>

The American Journal of Health-System Pharmacy

<http://www.ashp.org/public/pubs/ajhp/>

PHARMACY COMPOUNDING HOTLINES

Paddock Laboratories, Inc.

<http://www.paddocklabs.com>

Pharmacy Times

<http://www.pharmacytimes.com>

Spectrum Pharmaceuticals

http://www.spectrumrx.com/ask_rph.asp

International Academy of Compounding Pharmacists

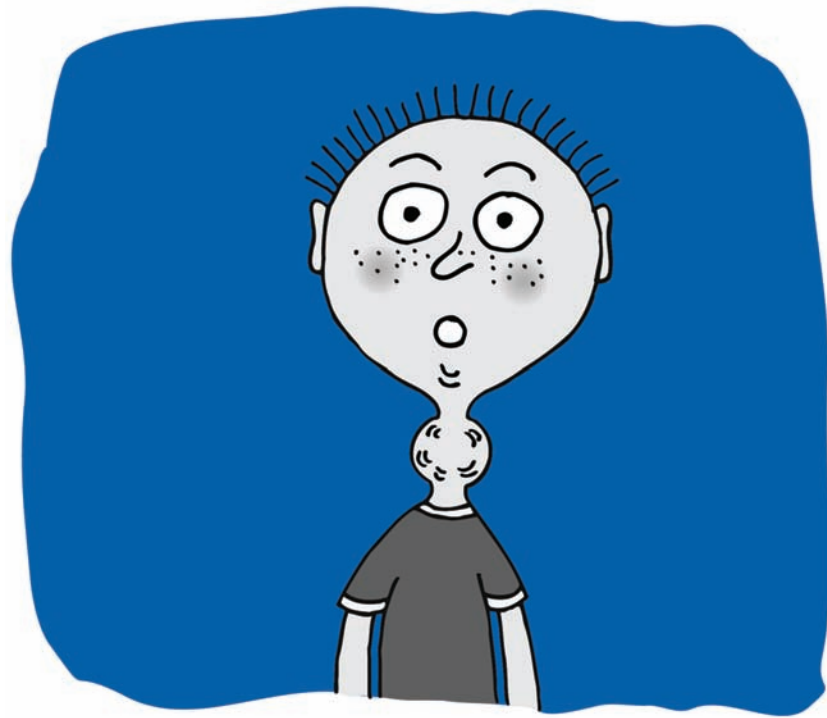
<http://www.iacprx.org>

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Hydralazine HCl
Ketoconazole
Labetalol
Metolazone
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