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Medicine Classification Research For a Health Web- Portal



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This Document is a research project about collecting freely available health portals for nurses/patients and creating a webpage which links them in an easy-to-use way. The objective is to create a web directory and the steps that have to be followed and some other recommendations before start programming.

It also consists in an investigation about how the people use the internet for seeking health information, why the information is searched and the problems that are presented have when seeking the information, to see the importance of a proper design and structure of a web directory.

Moreover, it is included how to evaluate the health-related information web pages and how to rate them in order to avoid including useless Web sites on the directory.

The result is a classification of Medicine, in a tree organization schema that will be used as an orientation guide, when a medicine web portal is going to be developed. Explaining what important characteristics of a directory are and focused in the web sites 2.0 and giving details about the user services that this kind of sites should offer.

KEYWORDS: Medicine Classification, web page classification, Medicine directory, Health web-portal, Medicine web site.

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1. INTRODUCTION

1.1 Objectives

The present document has been produced with the aim of originating a reference guide to a future design of a web portal with links to health web pages, other web portals and the better sites with health information founded on the internet.

The main goal is to create a directory with the most accurate division in categories of the medicine, taking into account the users preferences, the way they look for the health information on the internet and the problems that can be found when the information is being sought.

The implementation of a web directory is also part of the project but will not be included in this paper.

1.2 Description of the Problem

Medicine (from the Latin word medicus, resulting in "healing") is the science whose object is both the study of the organization of the human body (anatomy), its normal functioning (physiology), as well as preservation of the health (prophylaxis), dysfunction (pathology) and the various ways to get the restoration of health (therapy).

[1]

The main problem with the health classification is that medicine is a very wide and interconnected area and because of that all the branches of medicine may overlap many other fields. As well the web pages probably may inform about more of than one category and it is common that different data and material of several fields are enclosed and related at the same place.

A Clearly division with no many levels in order to have an easy-way to reach the links is the goal.

It will be studied different forms and cases of classification because every classification may be valid depending which objective it is for. [2], [3], [4]

2. CONTENT

2.1 Seek health information on internet

Internet is the biggest encyclopedia ever that provides documents, images, videos and another free available data. Easier access to new information technologies and communications, and the more attainable access to the Internet makes the search Health Information a growing phenomenon, and nowadays is the most used source to find Health Information because Health information consumers are becoming not only more involved in their own health care but also more information technology minded. This “Health seekers” — Internet users who search for health information online whether they play the role of consumer, Health care provider, or online patients. — grow in number every as the health information available on the internet.

Online health information resources act as an important role in the medical choices made by millions of consumers. In a 2007 survey of 2,054 American adults (18+ years) conducted by the Pew Internet Project, 75% of American adults reported using the Internet to look for health or medical information. [5]

The Internet is advantageous to traditional information media, like newspapers, television and books because is easier to access.

One of the most common problems with the doctors is that they do not provide enough information about the medical problems of the patient, which is one of the reasons why usually internet is used to get more information about their illness. Patients want to know clear information to understand what they have. Get answers, and questions to ask to their doctors to get ready and well prepared for the discussion in the next consultation. 33% of health seekers later talked with a doctor or other health professional about the information they found online. [6]

Another reason is privacy: The net protects your anonymity and sometimes the topic searched is embarrassing to ask, so is good to have complete confidentially.

Also the health taboos: Genital and reproductive health concerns , incontinence, mental health, and even dental issues have all been linked to moments of embarrassment and the desire for anonymity in initiating the seeking of medical attention. It stands to reason that people are apprehensive about seeking medical attention when their health

condition involves parts of the body or activities which are socially a taboo to talk about. [7], [8], [9], [10]

And interactivity: The patients like to talk about their illness, share his situation and get answers or advice from similar cases. While participating in support group people receive great comfort, even if the people are total strangers. There exist a lot of specific support groups where people share information, experiences, and where give and receive emotional support. Moreover health professionals may be consulted. There are Online doctors where people can ask for everyday medical problems, only to have a first sigh of information and then decide if it worth to go to the doctor's office

Sometimes also people search for diagnoses and treatment. Get a second opinion. To judgment his doctor's diagnosis and the quality of the care they receive. 54% say the information guides them to request to the doctor new questions or to get a second opinion from another colleague. [6]

The way users usually seek the information is search directly for the health information. Directly through the search engines, like google.com or yahoo.com, writing the name of the illness or the issue or looking for it in the directories. Users of the internet investigate no more than the first few links on general search engines when in quest of health information [11]

Trust WebPages that have been suggested by a familiar or friends, word of mouth is usually the better way to recommend sites, Also WebPages that have been advised by the doctor or Web Portals that have been good rate in forums or blogs. 66% of health seekers initiate their last online health inquest at a search engine and 27% began at a health-related website. [12]

2.2 Statistic of Internet use

It is known the important of internet and is growing faster and faster. There are millions of internet users and the number increases every day.

	POPULATION	% of Population	USERS	% Of Use within Population	% USERS in WWW
AFRICA	991.000.000	14,65	67.317.000	6,79	3,88
ASIA	3.808.000.000	56,30	738.257.000	19,39	42,58
EUROPE	803.000.000	11,87	418.029.000	52,06	24,11
MIDDLE-EAST	202.000.000	2,99	57.425.000	28,43	3,31
NORTH AMERICA	340.000.000	5,03	252.908.000	74,38	14,59
SOUTH AMERICA	586.000.000	8,66	179.031.000	30,55	10,33
OCEANIA	34.000.000	0,50	20.970.000	61,68	1,21
TOTAL	6.764.000.000	100	1.733.937.000	25,63	100

Table 2.1: Statistics of internet use. [13]

The rate of the use of internet in North America has a penetration rate more than 70%, and not only the young people use it, as we can see in the following table. [13]

Age Group	Total Population	Number Using Internet	Percentage
18–29	34,964,001	26,922,280	77
30–49	80,148,577	60,111,395	75
50–64	54,274,684	31,479,316	58
65 and older	34,991,753	8,000,000	4

Table 2.2: Use of Internet in EEUU by age groups. [14]

As we can see in the table the percentage of the use of internet is very high, and this rate is not going to do anything than grow because in a few years the new generations will be completely technologically minded.

2.2.1 Health Information Statistics

Eighty percent of American internet users, or a quantity of 113 million adults, has looked for information. [15]

Health Seekers	
Demographic Group	Percent Who Have Looked for Health Information Online
Online women	82%
Online men	77
Internet users age 18-29	79
Internet users age 30-49	84
Internet users age 50-64	78
Internet users age 65+	68
Internet users with a high school diploma or less	71
Internet users with some college education	80
Internet users with a college degree	89
Internet users with 2-3 years of online experience	62
Internet users with 6+ years of online experience	86
Internet users with a dial-up connection at home	75
Internet users with a broadband connection at home	86

Table 2.3: Pew Internet & American Life Project, August 2006 Survey. [12]

As we can see in this table, all the percentages exceed the 60%, it means that most of the people of internet users in every class seek for health information on internet. This is the reason the health information has to be presented clearly, and in an easy way to find it.

This percentages will be obsolete in few years, just because the internet rates increases widely and the access, the connection and the penetration will be practically 100% in the next generations and further more the internet connection will turn faster, and almost everyone will have access at home so the population will need less effort to search the information. [16], [17]

2.3 Navigation difficulties

The increase of Health Information seeking on the Internet has clear advantages for users, but also possible risks related to poor qualities of information, fraud and lack of respect for individual privacy or other rights of users. [18]

- Information overload: The internet has billions of web pages, and here appears a “little” problem how to search information when the source is too big? It is a dilemma because is almost impossible to effectively, search, file, index organize or number the information because it is too large. There are also too narrow categories, so even in a small category of medicine the structure became no navigable.

The general causes of information overload include:

- A rapidly growing rate of fresh information being produced every day.
 - The ease of replication and diffusion of data across the Internet.
 - An increase in the available number of channels of incoming information (e.g. telephone, e-mail, instant messaging).
 - Large amounts of historical information to dig through.
 - Contradictions and inaccuracies in available information.
 - Lack of a technique for contrast and processing different kinds of information.
 - The portions of information are unconnected or do not have any overall structure to reveal their interaction.
- Disorganization: All the information is disorganized. Every day more and more information is attached, with no control, regulation or categorization.

It is very complicated to create a proper organization, because all the medicine fields are related and interconnected somehow. Good criteria and division for someone could be very bad for other.

- Searching difficulties: Internet has all the information, but sometimes is hard to reach it. The search engines are not precisely enough to accomplish a good seeking, not because it cannot get the proper article but because there are different tags that achieve the same data and the same tags that achieve different data.
- Inaccessible or overly technical language: Consumers may be not well prepared for the technical language in which some pages are written, even some health professionals may find it difficult to read.
- Lack of user friendliness: Some health sites may be confusing for the user due to confuse unclear layering, difficult to follow links and lack of inside-search options. Consumers not used with the technology may be intimidated and leave the use of internet for health porpoises.
- Lack of permanence: The World Wide Web is not static, it is changing and altering, its webs can disappear, move, or change without advice. Many of the links, if you do not have maintenance, will be broken or unreachable, that will make a web portal inefficient or even useless.
- Lack of peer review or directives that regulate the information on internet: All the web pages show the information in its own way, because anyone can create an internet site and the sites are not regulated or reviewed. This gives cause for quacks and charlatans that can promote useless products and remedies, that gives false hope and inaccurate information about the results. Also exists malicious users that create a website with wrong info just because to be mean. But in the other hand there exist well-intentioned users that publish their information based on their personal experiences, that sometimes may be helpful but other may be detrimental to the reader since not all the remedies work in the same way for distinct people.

- Risk-promoting messages proliferate: On Internet can be found hundreds harmful advices and guides to carry out not healthy behaviors. Disorders like anorexia and bulimia can be found on internet not for treatment but for found methods to do it in the better way or advices to avoid family to notice it. Beyond these disorders exists other info much more dangerous. Some people can look for information about how to make his own medicines and drugs this is potentially dangerous, because people without the minimum knowledge can try and a little mistake can be lethal. However the most risky messages that can be founded on the net are the posts that aid to commit suicide. These messages gives information about suicide methods help people to die.
The problem is that such kind of information cannot be controlled or banned, but hopefully almost all of the search engines lists in the first positions help support pages. For example if it is searched “I want to die” the first link is a page with the title “read this first”.

2.4 Web Page Classification

Due to the incredible size of the Web, and its increasing number of pages and services, is more and more delicate to realize a proper classification valid for any site that can be found on the web. Even some times web pages can be so large that may be a combination of several of the categories, and implement different options, thus, web pages can be classified into various categories.

Based on the content and features offered:

- Search Engines, directories and portals:
 - Search engines: designed to search for information on the World Wide Web, and displays the list of web pages based on keywords, and operates algorithmically.
 - Directories: is specialized in categorizing web links, recognizing, differentiating and subcategorizing the links. Directories are maintained by human editors.

- Portals: It is a website that on the home page allows access to multiple sections that usually are forums, chats, email accounts, search, a registered access for certain benefits, the latest breaking news ... a lot of resources to provide the best user search experience for a particular subject or for a very broad topic.
- Information Web pages: shows information, in any format it can be newspapers, which publish news, articles, editorials... and can be issued daily or weekly. Can be encyclopedias that is a large set of articles and entries that can be written by a company, a University or nowadays very popular in internet with user generated content, also exist dictionaries that are usually collection of words alphabetically ordered and explains its meaning, etymology, phonetics and pronunciation, or online libraries that is a compilation of books and articles and more.
- Blogs: Is a Simple web page where usually an individual add posts, that can be entries, comments or media (videos, links, music and others), ordered by date.
- Forum: Is a discussion site, were the users (Registered or anonymity) converse about a topic. Usually controlled by a moderator, to keep the rules of the forum and prevent spam.
- Online Shop: is a web with an online catalog, where users can order products and allows paying online via credit card, PayPal, Bank transfer and more.
- Company Web sites: Webs were the companies show their business and services to the clients.
- Social networking: Is a web which structure is based on the individuals or groups like the basis of the connectivity.
- File sharing web sites: A web server that offers the possibility to interchange files with other users.

2.4.1 Health web pages

The Health Web pages can also be divided like general WebPages, but when the time came to distinguish ones from others is more important the content that the way it is presented.

- Search engines: There exist several Search engines specific to the health web pages. But normally the service is not given alone, most frequently is to belong a health portal.
- Health directories: Separate the health links into categories and subcategories.
 - Divided by branches.
 - Divided by Medical conditions or illness.
- Information: Useful medicine information can be founded on the web.
 - Book: online libraries.
 - News: Online journals.
 - Encyclopedia & dictionaries.
- Forum & support groups: pages where you can discover people and discuss about health.
- Online doctors: Anonymity gives users the possibility to ask medical questions that usually are embarrassing to ask to the primary care physician.
- Companies' web pages: Products and services are offered.

2.5 Evaluation of Web pages

There are some topics that have to be checked in order to evaluate a webpage, sponsorship, currency, validity, ... have to be present to be sure that the information collected is correct.

You have to be able to identify the Sponsorship. It is important because identify where the information comes from, and identifies if it is a respectable and dependable site and its information published is credible. Pay attention in the web address, itself may provide extra information about the kind of the site and the authority's purpose.

Domain	Intention
.com	Derived from commercial, the purpose is for general commercial character.
.info	Derived from information, the purpose is for informative internet sources.
.net	Derived from network, the purpose is for organizations of networking technology.
.org	Derived from organization, the purpose is for non-profit organizations.
.edu	Derived from education, the purpose is for educational institutions.
.gov	Derived from government, the purpose is for the general administration of U.S.A

Table 2.4: Most used domains

.Com sites are usually commercial sites that are suppose to sell products on the website but that does not mean that the commercial sites has no credible information, also the domain .com may house websites which intention is only informational and educational so the site should bring out the sponsorship and the website intentions. The website is supposed to clearly state whether the information is proposed for the customer or the health professional. Many health information websites have two different sections - one for consumers, one for professionals. The design of the site should make distinction of the two areas to the user.

Other of the most important points that have to be checked is if the site is updated frequently. Health information evolves constantly as new information is discovered about diseases and healings through research and patient care. Websites should reflect the most up-to-date information. Also the website should be permanent accessible, with the date of the latest update clearly marked. This usually appears at the bottom of the page.

It is obvious that the information should be presented in a clear manner. It should be accurate (not opinion) and able of being approved from a principal information source such as the professional literature, abstracts, or links to other web pages. Information offered as an opinion should be clearly declared such personal and the font should be identified as a qualified professional or organization. [19] [20]

2.5.1 Rating health Information

To measure the Health web pages is not a trouble-free task, the most important part is the given information, but there are also some important questions it has to be asked for a proper web rating.

The first point to bear in mind is if the site provides a quick response to your health questions. Sometimes it is known that some useful information is inside, but it is not easy to reach it. The knowledge has to be easy to get and has to be comprehensive, the purpose of the material has to be specified, clearly marking the function the information can be used for and it has to be clearly separated from the advertisements. The site should make it easy to distinguish ads from content. In order to no confuse the user, the clarification of whether the site's function is to sell products and services or is a primary information content provider should be shown.

The most important point is if the site is trustworthy, the content must hold a sound grounding in health. Including the source, currency, relevance/utility, and editorial review process for the information. The site should have a professional back, if the sponsor or the support is known, costumers will instant trust the information provided.

Other item to consider is if the site has been updated. Old information is useless and could be dangerous. It is very important that all the material is bringing up to date. The information on the web can be expired, over dated or just not updated to the most accurate and latest one. For this reason a date with the last update is vital.

The Design of the site is also significant for the client, the site is supposed to look professionally designed. A high-quality presentation makes the consumer more comfortable and the site's design ought to look appropriate to its subject matter. It depends on the topic you are concerned with. An important subject should be presented in a sober way.

Interactivity makes the user more comfortable with the application. It should include feedback mechanisms and means for exchange of information among users. Apart from feedback, it would be great if the user has the possibility to ask questions to the administration and the source of the information. [21] [22] [23]

Rating information websites is complicated if the costumer do not have enough medical knowledge, that is the reason why exists certificates like the HONcode (Health on the net foundation), that analyses health websites and check the privacy, attributions, the qualifications of the authors and demonstrate that the website intentions are right.

2.5.2 Rating a Health site Examples

In this chapter some web examples are going to be analyzed, with these criteria is possible to rate and evaluate a site with the intention of verifying that the information inside could be useful for medical purposes. Those are the factors that are going to be examined.

Site: Name of the site to be rated.

Domain: See table above. (In the Evaluation web pages chapter).

Support: This factor is the most significant for the credibility of the site and its information content. In the “about us” section should be clearly defined. Be careful! Seldom times a webpage may be attacked by hackers and what is seen is a hoax,

which is called web spoofing, and is created with the aim to obtain data of the user.
But this is not very common.

Factual information: This is a rough factor, because sometimes is difficult to determine if the information presented is truthful or not, so in some cases only the intuition can be used to give the information a percentage of honesty.
Yes/No/Probably Yes/Not Sure

Last update: Include the last day that the web was brought up to date. Yes/No

Intention: It is possible to tell between commercial or informational.
Informational/Commercial/Both

Ads: The web has advertisements included in the site. Yes/No

Navigation: It is clearly how the site is divided and how is the navigation through it.
Easy/Difficult

Design: To check if the web page is designed professionally. Professional/Amateur

Interactivity: The site incorporates a “contact us” section or the possibility to write to the staff of the web. Yes/No

HONcode: Is marked with the HONcode stamp? Yes/No

National Cancer Institute

Site	http://www.cancer.gov
Domain	.gov
Support	U.S. Government
Factual Information	Yes
Last Update	No
Intention	Informational
Ads	No
Navigation	Easy
Design	Professional
Interactivity	Yes
HONcode	No

Table 2.5: Example rating web page #1

Clarification: This site belongs to the Department of Health of the U.S. Government, so is suppose that all the information inside should be based on facts and that is updated frequently (even it has no mark of the last update), The intention is informational because the administration is not a company, and it has been design by professional as we can see the navigation is easy, it has no advertisements and contact info. Has no HONcode because the government web pages do not need external companies to verify the information inside.

Mayo Clinic

Site	http://www.mayoclinic.com/
Domain	.com
Support	Mayo Clinic
Factual Information	Yes
Last Update	Yes
Intention	Informational/Commercial
Ads	Yes
Navigation	Easy
Design	Professional
Interactivity	Yes
HONcode	Yes

Table 2.6: Example rating web page #2

Clarification: This is the site of a medical research and medical practice group in U.S.A. It has informational and also a commercial part that is one of the reasons it has announcements, it has factual information because is checked by the HONcode, it is professional designed and is easy to navigate. The articles has the date when were published. Personnel can be contacted easily.

Hematology Atlas

Site	http://www.hematologyatlas.com/
Domain	.com
Support	Department of Clinical Pathology, Cancer Hospital, Sao Paulo, Brazil
Factual Information	Probably Yes
Last Update	No
Intention	Informational
Ads	No
Navigation	Easy
Design	Amateur
Interactivity	Yes
HONcode	No

Table 2.7: Example rating web page #3

Clarification: This is a personal site of Nivaldo Medeiros, Physician, Department of Clinical Pathology, Hospital do Câncer (Cancer Hospital), São Paulo, Brazil. It is personal information and it has not been checked or review by nobody so it is up to the reader to trust the information. Even it has an easy navigation and has no publicity the web is design in a not very professional style.

Reliable Meds

Site	http://www.buyusarx.com/
Domain	.com
Support	Unknown
Factual Information	Probably No
Last Update	No
Intention	Commercial
Ads	No
Navigation	Easy
Design	Professional
Interactivity	Yes
HONcode	No

Table 2.8: Example rating web page #4

Clarification: This is an online medicine shop. It has professional looking with easy navigation, no ads and contact information but the “last news” were published on 2006 and adding that the web has no mention to any professional support or any official accreditation, it is recommendable not to use this site.

3. How to make a general medicine directory

3.1 Medicine Directories

Innumerable medicine directories exist on the net, all of them with different classifications and diverse organization of all the web pages and links. Usually the most popular directories such as [<http://dir.yahoo.com>] or [<http://www.dmoz.org/>], the medicine is just a category of all of the categories that can be founded. Other options are the directories for only one specialty of medicine, like [<http://www.nurses-directory.com/>], here are located profiles, qualification, jobs, etc... and all related information for nurses, or like [<http://ushealthservices.com/>] that is a yellow pages directory. But you also can find the opposite situation, a specific directory that contains a category of medicine like [<http://www.doaj.org/>] that is a directory of open access journals and has a category of health sciences.

Not all the directories have significance. There are also present lists and very simple directories, like [<http://www.e-lynks.com/health.htm#top>] or [<http://www.lib.uiowa.edu/hardin/md/az/n.html>] that do not worth it.

3.2 Steps to create a wide-ranging Medicine Directory

To build a proper online directory first of all is to define the requirements, detail the services and set the limits that are going to be needed. Before start designing the web, it is necessary to decide what is needed to be done. The first step is to decide what sort of directory, for what purposes and for what is desired. Choose between the diverse types of directories and begin with an initial classification, which of course may be changed along the developing. The preliminary categorization will almost certainly be adjusted, but is good to have an idea before hand of the length and the deep of each category.

It has to be specified how many division the medicine is going to contain, not only because the medicine is very large topic, but because inside a single subject it can be discern from forums, journals, or just information sites.

A problem when a directory is being prepared is that a web page can belong to only one category but probably to multiple categories, and the question to be asked is if it is good to have the same link in only one category or have the same data duplicate in several places. Usually is better to make the link belong to multiple categories, because a webpage will probably fit in more than one category, for example a web page with information about cardiology procedures, should be in categories like cardiology and surgery because belongs to both of them.

Other vital point that has to be defined before commencing the plan is to recognize the users that will use the site. It may be different for a site if it is only be accessed by health-care professionals, only by clientele or that both can access to different parts. If a separation by users is determined, the users must be registered in the system to give permissions to the particular groups to be able to mark the services and the rights to entry to the sections of the directory. If there exist no differentiation within the users does not mean that they do not need registration. A difference must be done between registered access and public access, no one that has not been identified could make any modification, write a message or a report. Stipulate the permissions and the level of access has the public and the registered users is a primary duty. A non registered user should not be able to participate in the directory, so unknown users cannot be malicious, and add advertisements, links to pages not related to medicine and so on. In the other hand registered users, should be able to vote, report malevolent links and in general, help with the directory making.

3.3 Directory 2.0

The complication of maintaining a directory is that it requires plenty of work. A directory is based on links, and the links may be a very ephemeral connection because if many web pages change the address could make the directory inefficient or even useless. Broken links will appear, and checking the directory link by link is a very tedious work and a waste of time. Other problem with the links is that new medicine

sites appear constantly and searching for new links and adding them to the directory can be an impossible task.

A very constructive solution to these problems is to relegate the preservation of the links to the final user. At the present time the sites where the user is part of the web are very popular. A site where the user will decide, choose, and vote the information contained, will be more accepted than a site where the information is selected by only one person or a decision group.

The main positive attribute of the webs 2.0 is that reduces the time of work to the administrators of the web, because the users are the principal persons interested in the good maintenance and the update of the site. If the users are able to add links, report broken and malicious links, it will help the supervisor of the web to preserve it.

The big dilemma of the webs 2.0 is that not all the users are well-intentioned, so the administrator has to be careful with the permission given to the registered users.

It is important to mark that depends on the honesty of the users, if the web is going to be used only by a consortium of enterprises, companies and universities the permissions given to the users can be more specific than if the web is for public access and anyone could use it.

If it is know that all the users are going to be respectable, can be allowed to the users to simply add new links, if the honesty is not clear or cannot be checked, the best option is to allow the users to add the links but instead of publish them immediately, put them in a waiting queue for a subsequent approval by an administrator.

When a new user is created, it should accept some terms of use of the company, and there should be included a clause where ban the improper act and transfer the responsibilities to the user and exclude the administrator, the designer and the owner of the site of any legal obligation. But even with the legal agreements, some users could pay no attention or ignore the legal advertisement and publish inadequate or illegal content. The problem as the broken links is that the administrator does not have enough time to check one by one all the links, and check if it obeys the rules. The easy solution to fix this is to have a report method that allows the viewers to advise and notify the

administrator that a web of an unsuitable behavior. With this system, the administrator only will need to read the reports and check the suspicious links.

Other indispensable feature that could be included in the directory, to make it easier to navigate, control and facilitate the participation on the web by the users, is to include tools to vote and rate. When the user is able to vote, and all the links are rated, the directory is more optimized because the best links are emphasized and refine the search to the users.

Another extra instrument to help the user is a search tool. The directory probably will be very wide, and open all the folders to look for only one specific subject could be exhausting. An inside search tool assist the user to go directly to his goal.

The most important characteristic of the web 2.0 is that is user-centered design and regulates the user as the center of sources and research, and set the user as the checker of the info.

4. DISCUSSION

Medicine classification and categorization are rough issues because medicine is very wide and large areas were all the categories are interconnected. The best option is to divide the medicine by branches, but then make the possibility to the link to belong to more than one category so is in the webpage the user may select one or more category depending of the content of the link.

A clear and friendly organization of the folders is an imperative, because health information seekers possibly will not know anything about health thus the web links can be approached in an effortless mode. Setting the user as the base of the information source and control, to manage easily the rapidity change of the content, is the primary mission.

This work shows importance and the increasing demand of the Health information on internet, everyday more and more people is searching Health sources on internet, resorting to the web instead of turning to the doctor. For this reason it is important that a directory helps the user to find the most useful, reliable and verified information.

Moreover, this project will save a large number of hours to the programmers that will build a web medicine directory. This document is only a reference guide as medicine can also properly be classified in a completely different manner depending of the aspect taking into account or the main focus of the directory but always will be a start point for future web health catalogs.

The limitation of this research is that is based only for a web directory, even if some parts could be helpful when building a health web portal, the designer will need more specifications such as the way the users can be contact between them, or the access and the permissions given to the different groups.

Future research needs to find a way to regulate and put in order the health information on the internet, because nowadays the information is out there, but in a very messy way. All the information is presented in different forms and sometimes cannot be differentiated the sites that the purpose is just informational and the sites that aspire to sell something or which one is useful and which one is a waste of time.

This research helped me how to manage to find good information on the internet, how to rate it with a briefly sight and of course was an assistance while I was programming a Health directory.

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APPENDIX 1 - MEDICINE CLASSIFICATION

There exists millions and millions of health-related websites and services and thousands are created everyday all around the world. Nowadays internet is the major source of information and millions of people search for health information whether it is for themselves or for a friend or relative.

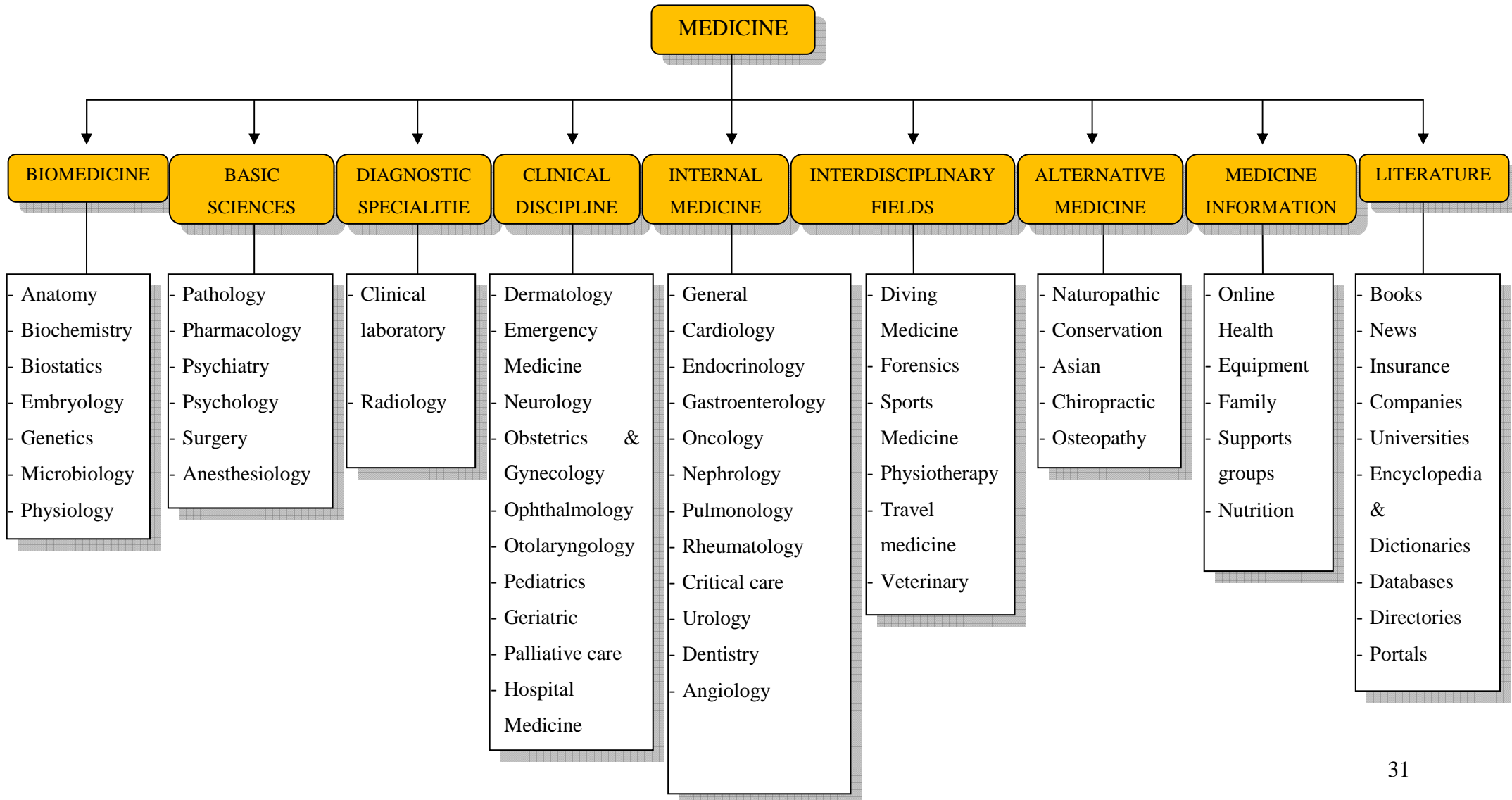
There are many possibilities to make a medicine classification, as there are many ways to present the medicine, in fact is a so spread topic that can be divided in many manners depending what objective is desired.

For health professionals and consumers, the access to the health information on the internet can be complicated issue, there are present a large amount of directories and search engines, even if there also exists specialized sources like [<http://www.healthline.com/>] and directories such as Yahoo [<http://dir.yahoo.com/Health/>] usually do not allow the user to access an organized and clear information, because does not follow a proper procedure when the tree is done, usually the tree is created placing the most searched in the front, not taking into account if could be better inside other classification.

The directory can be subdivided within different categories, such as medical branches, medical conditions or illness, the most popular tags searched, depending the patient is it for. When the tree is divided in medical conditions or illness it is prioritized bridging the diseases, this classification maybe good for a website which offers treatments and help, but the problem appears when illness and other problems are in the same level like, diabetes, adolescent pregnancy and depression so the information is quite mixed, similar occur when it is ordered by number of “hits” (number of views an article or a section have), that is not a problem if the customer is seeking for one specific section but might be a hitch if is a professional who is searching for general information. Comparable problems emerge when the classification is centered and divided by patient, all of these subdivisions are useful when the site is focused for the final costumer, the persons who is going to use the services of the page and the site is going to have benefits with it.

The classification is divided into Branches. All the web pages separated within its own medical field allow the user search for all the web pages with a little effort, by the topic, in a comprehensible tree organization. This is the better classification for health professionals and medical amateurs because with a modest knowledge of medicine the users possibly will move around the directory without any difficulty.

1. Medicine Chart



2. Menu

This Menu belongs to a directory website where the user can add WebPages into the different categories. This is the division and subdivisions of categories that were created in order to cover all the possible medicine topics.

1. BIOMEDICINE

- **Anatomy** is the branch of science that studies the structure of the body and the connection with its organs.
 - Gross Anatomy
 - Microscopic Anatomy
 - **Histology** is the education of the microscopic structure of tissues.
 - **Cytology** is the area of science that discuss with the structure and function of cells.
- **Biochemistry** is the division of chemistry related with the chemical behavior in living beings.
- **Biostatics** is the use of statistical tests to analyze biological data.
 - **Epidemiology** Is the study of elements affecting the health and illness of populations, and helps the basis and logic of involvement made in the interest of preventive medicine and public health.
- **Embryology** is the analysis of the early development of organisms.
- **Genetics** is the analysis of genes, and their role in biological inheritance.
- **Microbiology** is the branch that studies microscopic organisms
 - **Virology** is the analysis of viruses and virus-like agents.
 - **Parasitology** is the analysis of parasites, their hosts, and the relationship between them.
- **Physiology** is the analysis of the activities and processes of living organisms.

2. BASIC MEDICAL SCIENCES

- **Pathology** is the analysis and diagnosis of disease through examination of organs, tissues, bodily fluids, and whole bodies.
 - **Anatomical Pathology** is a medical specialty that is concerned with the diagnosis of disease based on the gross, microscopic, chemical, immunologic and molecular examination of organs, tissues, and whole bodies.
 - **Clinical Pathology** is a medical field that is related with the diagnosis of disease based on the laboratory analysis of bodily fluids
 - **Cellular Pathology** or **Cytopathology** is a specialty of pathology that studies and diagnoses illness on the cellular level.
 - **Autopsy** is a medical method that consists of a thorough inspection of a corpse to determine the cause and manner of death and to evaluate any disease or wound that may be present.
- **Pharmacology** is a medical specialty that is concerned with drugs and their derivation, nature, properties and effects upon living organisms.
 - **Clinical Pharmacology** is the science of the clinical use of the drugs.
 - **Toxicology** is the study of the constitution, reactions and the detection of toxics and the treatment.
 - **Psychopharmacology** is the study of drug-induced changes in the character, feelings, thoughts, and behavior.
 - **Pharmacogenetics** is concerned to the study of clinical tests of genetic variations that gives different response to drugs.
- **Psychiatry** is a medical specialty that study and treat the mental disorders, which include emotional, behavioral, cognitive and perceptual disorders.
- **Psychology** is an academic and practical discipline that comprehends the scientific study of human mental capacities and behaviors.
- **Surgery** medical technology consisting of a physical intervention.
 - **General Surgery** is the surgical specialty that center on abdominal and stomach are organs.
 - **Neurosurgery** is the surgical specialty involved in the treatment of disorders of the brain, spinal cord, and peripheral nerves.

- **Cardiovascular surgery** is a surgery on the heart and/or great vessels.
- **Orthopedic surgery** is the branch of surgery that focuses on skeletal system and related muscles.
- **Plastic Surgery** is the branch of surgery that is concerned with the correction or restoration of body parts.
- **Transplant** moving of an organ from a donor site on the patient's own body.
- **Anesthesiology** an anesthesiologist administers anesthesia and monitors patients under anesthesia during surgery and other medical procedures.

3. DIAGNOSTIC SPECIALTIES

- **Clinical laboratory** is a laboratory where tests, diagnostics or other screening procedures are executed.
 - **Transfusion medicine** is related with the blood components and blood transfusion.
 - **Hematology** is branch that deals with blood diseases, including lymphoma, leukemia, and myeloma.
 - **Immunology** is a branch of biomedical science that is concerned with the study of all aspects of the immune system.
- **Radiology** is the use of radiation technologies (x-ray) and other imaging technologies (such as ultrasound and magnetic resonance) to diagnose or treat disease.
 - **Interventional radiology** is a subspecialty of radiology which uses various radiological techniques to diagnose and treat conditions.
 - **Nuclear Medicine** is a branch of medicine specialized in the use of radioactive materials for diagnostic and therapeutic purposes.

4. CLINICAL DISCIPLINES

- **Dermatology** is the branch of medicine that focuses in skin diseases and other skin disorders.
- **Emergency medicine** is the branch of medicine that is concerned with the prompt diagnosis and treatments resulting from an accident or other urgent need.
- **Neurology** is the area of medicine that is focused on the structure, functioning and diseases of the brain and the nervous system.
- **Obstetrics and gynecology** is the field of medicine devoted to conditions specific to women.
- **Ophthalmology** is the branch of medicine that focuses on the anatomy, functions, and diseases of the eye and areas surrounding.
- **Otolaryngology** is the area of medicine that specializes in the diagnosis and treatment of ear, nose, throat and neck disorders.
- **Pediatrics** (or paediatrics) is dedicated to the health of infants, children, and adolescents.
- **Geriatric medicine** focuses on health care of the elderly people.
- **Palliative care** is a branch of clinical medicine that helps the people with terminal diseases by relieving suffering, controlling pain and giving emotional support.
- **Hospital medicine** is the medical discipline that deals with the care of hospitalized patients.
 - **Nursing** is a healthcare profession who is responsible for the care of individuals, families, and communities helping with the treatment, safety and recovery.

5. INTERNAL MEDICINE

- **General** is the branch of medicine that deals with the diagnosis and treatment of many medical conditions for adult people.
- **Cardiology** dealing with disorders and the function of the heart and blood vessels.

- **Endocrinology** dealing with disorders of the endocrine system, the hormones and their related disorders.
- **Gastroenterology** concerned with the field of gastrointestinal tract diseases
- **Oncology** deals with the treatment of cancer and tumors.
- **Nephrology** deals with the study of the malfunction and disorders of the kidney
- **Pulmonology** is specialized in the diseases of the lungs and the respiratory tract
- **Rheumatology** deals with the diagnosis and therapy pathologies of the muscles or tendons or joints
- **Critical care medicine** provision of life support or organ support systems in patients who are critically ill and who usually require intensive monitoring
- **Urology** specialty that focuses on the urinary tracts of males and females, and on the reproductive system of males.
- **Dentistry** is that part of medicine that relates to the mouth and its diseases
- **Angiology** is the medical specialty which is concerned with the diseases of circulatory system and of the lymphatic vessels, and its disorders.

6. INTERDISCIPLINARY FIELDS

- **Diving medicine (or hyperbaric medicine)** is the treatment of the undersea environment illness.
- **Forensic medicine** is the branch of medical science that determines the cause of the death for legal purposes.
- **Sports medicine** concerned with the prevention, the diagnose and the treatment of injures of athletes.
- **Physical therapy (also physiotherapy)** is a health profession that treats injuries or dysfunctions, to maintain and restore maximum movement and function.
- **Travel medicine or emporiatrics** is the area of medicine that is concerned with the prevention of health problems for who is going to travel abroad.
- **Veterinary medicine** is the branch of medicine that is related with the health of the animals.

7. ALTERNATIVE MEDICINE

- **Naturopathic medicine** is a system of medicine that uses natural remedies and accepts the body's natural ability to heal and maintain itself.
- **Conservation medicine** Is focused on the connection between human and animal health, and the role of the environment in causing or mediating disease.
- **Traditional Asian Medicine** includes a range of traditional medicine practices originating in China.
- **Chiropractic** is a primary health care profession that diagnosis, treats and prevents neuromuscular disorders
- **Osteopathy** is a branch of therapy that gives emphasis to the responsibility of the musculoskeletal system in health.

8. MEDICINE INFORMATION

- **Online Helath** healthcare practice via internet.
- **Medical Equipment and technology** Devices used for diagnosis and monitoring or treatment of medical conditions.
- **Family Medicine** Disease Prevention, Health promotion and education.
- **Support Groups** Online Groups where members can share information and give and receive both emotional and practical support.
- **Nutrition** is the study of the effect of the aliments on the body.

9. NEWS, BOOKS, & OTHER USEFUL INFORMATION

- **Books** To find specific book, or authors.
- **News** All kind of news from medicine journals, articles, editorials, actual Information...

- **Health care & Insurance** Public and private companies for reimbursement of health care costs.
- **Companies: Products/ Web Pages** Health companies' official sites.
- **Universities:** Medicine Universities web pages.
- **Encyclopedia & Dictionaries** Health and Issues Definitions.
- **Databases** organized collection of data for one or more multiple uses.
- **Health Directories:** Categorizing health-related web pages.
- **Medicine Portals** Web portals with links to others web pages.

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