Stephanie Holmgren. Following Quality Guidelines: An Assessment of Library Websites Offering Consumer Health Information. A Master's paper for the M.S. in L.S. degree. November 2002. 98 pages. Advisor: Claudia Gollop

Due to concern over the reliability and accuracy of online health information, several organizations have developed criteria to aid health consumers in evaluating the quality of health websites. These criteria also act as guidelines for developers to ensure they are creating websites that adhere to certain quality principles.

Given the important intermediary role libraries serve in the dissemination of health information, this study was designed to assess how well libraries are following the quality guidelines when developing their own consumer health websites. Do the libraries meet a minimum standard of quality?

One hundred and eighteen library websites offering consumer health information were evaluated on nine criteria: purpose, authority, disclosure, scope, accuracy, currency, relevancy, accessibility, and navigability. Overall, the scores show that most libraries fail to meet even half of the minimum quality criteria. Only two libraries scored in the top quartile. While most library sites rated well on accessibility and navigability, areas for considerable improvement include authority, disclosure, currency, and relevancy.

Headings:

    Consumer Education

    Health – Information Services

    Web sites – Design

    Web sites – Evaluation

FOLLOWING QUALITY GUIDELINES:
AN ASSESSMENT OF LIBRARY WEBSITES
OFFERING CONSUMER HEALTH INFORMATION

by
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OVERVIEW

Be careful of reading health books. You may die of a misprint. Mark Twain

The explosion of consumer health in the United States has been propelled by several changes in the health care industry – managed care, cost control, shorter visits with health care providers and a move towards outpatient care. As a result, consumers are actively acquiring information to take more responsibility for their own health care.   Towards this end, the advent of the Internet has been both a benefit and a bane for the consumer seeking health information.

Quality Issue

Without a doubt, the Internet has made health information more widely accessible to the general public. In addition, the Internet offers an unparalleled magnitude of information. However, quantity does not imply quality. Twain's words can easily apply to the estimated 70,000 health websites currently available on the Web. Recent studies have expressed concern over the inaccuracy and unreliability of online health information. To address the quality issue, several organizations such as Health on the Net, the American Medical Association, and MedCertain have developed criteria to aid health consumers in evaluating the quality of health websites. These criteria also act as guidelines for

developers to ensure they are creating websites that adhere to certain quality principles.

The Role of Libraries

Libraries provide an important intermediary role in the dissemination of health information. As more health consumers turn to the Internet for information, libraries have begun to augment their physical presence with a virtual one.   Librarians often use the quality criteria to assist in their own selection of credible health sites, as well as, to instruct library users on how to search for quality health information online. Only recently has the literature begun to address how libraries can use the criteria as guidelines for developing their own quality consumer health websites.

Research Question

If libraries want to be perceived by users as trustworthy intermediaries, then their consumer health websites should meet a minimum quality standard. This study was designed to assess how well the consumer health websites of 118 libraries adhered to the following nine quality elements: purpose, authority, disclosure, scope, accuracy, currency, relevancy, accessibility, and navigability. Given the extent of the published literature, conferences, and workshops on the subject, one would expect that libraries would rate well in providing quality consumer health websites.

LITERATURE REVIEW

Consumer health information (CHI) is …

any information that enables individuals to understand their health and make health-related decisions for themselves or their families (Patrick and Koss 1995, 4).

The Consumer Health Movement

Although lay health information has been published since the Middle Ages

(Gann 1991), it wasn't until the 1970s when *Our Bodies, Our Selves* helped to

revive the consumer health movement in the United States (Horne 1999; Sieving

1999). Demand for CHI has solidified within the past decade as a result of the

following critical changes impacting the health care environment.

- An aging and educated population means not only heavier use of the health care system, but also an increased need for information (Sieving 1999).
- Higher managed care enrollments and tighter fiscal constraints have propelled health consumers to become more proactive about their care (Cline 2001; Pennbridge 1999; Pew Internet Project 2002).
- The average ten to fifteen minute doctor visit leaves many patients with unanswered questions (Cline 2001; Pennbridge 1999; Pew Internet Project 2002).
- Due to time demands and constraints, physicians have been unable to keep their own current awareness in pace with the burgeoning health information explosion (Cline 2001).
- Emphasis on self-care and prevention is empowering the patient to become more responsible for his/her own health care decisions (Cline 2001).

To meet this demand, numerous organizations ranging from the

government and non-profit organizations to support groups and libraries have

expanded their roles to include the provision of consumer health information

(Sieving 1999).   However, the advent of the Internet "created an avalanche of easily accessible information" (Appleby 1999, 21), making it the single largest factor facilitating the supply of consumer health information.

Consumer Health Information Moves Online

Since an estimated six million people per day seek health information (Pew Internet Project 2002), it is not surprising that health information is the "single largest [printed] subject for popular and professional readers" (Deering and Harris 1996, 211). With the added power of the Internet, the availability and accessibility of health information has grown exponentially. While estimates of the number of health websites vary, the latest literature quotes approximately 70,000 health websites in existence (Pennbridge 1999).

The recent Pew Internet report, *Vital Decisions*, revealed that the number of users seeking online health information has correspondingly increased along with the number of websites. In 2000, an estimated 52 million adults, or 55% of Internet users, sought health information. One year later, the number of online health seekers had grown 63% to approximately 73 million users (2002).

Rees (2000, 82) and Baker, Spang and Gogolowski (1998, 254) indicate consumers typically search for the following types of health information:

- Alternative and complementary medicine
- Clinical trials
- Coping mechanisms, local resources, and caregiving
- Cyber-doctor consultations
- Disease prevention and health promotion topics
- Drugs - precautions, dosages, side effects, and interactions.
- Environmental health issues
- Full text articles

- Health care system
- Medical treatments - surgical techniques and procedures
- Nutrition, diet, and weight control
- Organizations, advocacy groups and associations
- Self-help and support groups and community resources
- Specific diseases - symptoms, diagnosis, and treatment

Benefits. The public's preference for seeking health information online has been attributed to the following advantages: accessibility (Cline 2001; Berland et al. 2001), anonymity (Frank 2000), convenience (Berland et al. 2001), interactivity (Cline 2001), lower expense (Frank 2000), and the potential for tailored information (Eng 2001).

Health seekers confirmed these advantages in the earlier Pew Report, *The Online Health Care Revolution* (2000). The following percentage of respondents reported they use the Web because of convenience (93%), more available health information (83%), anonymity (80%), and improved access (55%).

Drawbacks. Despite its numerous benefits, the Internet still possesses many limitations in the form of access, navigation, and quality issues (Cline 2001). While the Web does offer greater access for some, issues of computer comfortability (Voge 1998), cost (Eng 2001), disability (Eng et al. 1998), language (Voge 1998), and literacy levels (Jadad and Gagliardi 1998) may pose significant barriers to others.

The dynamic, uncontrolled nature of the Web adds further to its navigational disadvantages. The literature well documents the Web's numerous drawbacks: disorganization (McKinley 1999), inadequate search engines, (Pereira and Bruera 1998), inconsistent updating (Gallagher 2000), lack of

permanence, (Pereira and Bruera 1998), technical or jargon language (McGrath 1997), and lack of user-friendly site design (Pennbridge 1999). As a result it is not surprising that online health information has been likened to a "traffic jam" (McGrath 1997, 90).

The Quality Limitation

Given health seekers' reliance on the Web for information, the health profession is seriously concerned that people retrieve not only relevant, but also quality information. "Since the potential for harm from inaccurate information…is significant," the U.S. Department of Health and Human Service's *Healthy People 2010* report lists "quality of Internet health information sources" as one of its health communication objectives (2000, E-11).

"The more easily consumers can find information, the more easily they can [also] find disinformation" (Earl 1998, 46). To further stress the point, Molly Mettler, Sr. Vice President, HealthWise notes that searching the Web is like…

> …hunting for wild mushrooms. If you know what you're doing and you've got a trusted guide, you can find a real treasure. But you run the chance of picking something toxic. (Sieving 1999, par. 18)

Traditionally, medical literature has benefited from the process of peer review, ensuring the reader access to reputable and sound information. By contrast, the self-publishing nature of the Web can result in content with poor editorial control (Berland 2001) and potential bias (Sheppard 1999). This drawback has led many to call online health information "bad, and even dangerous" (McKinley et al. 1999, 265), "inaccurate, erroneous, misleading or

fraudulent" (McLeod 1998, 1663), and "incomplete" (Silberg 1997, 1244).

Silberg's warning, "*caveat lector et viewor* – let the reader and viewer beware"

captures the problem (Silberg 1997, 1244).

Proof of Error. Over the past five years evidence has emerged validating

the concerns over misinformation. The groundbreaking study by Impicciatore et

al. (1997) assessed forty-one websites' recommendations for managing fever.

Only four sites were completely consistent with the medical community's

established guidelines.   A similar study by McClung et al. (1998) found that 48 of

the 60 medical websites examined were not in compliance with the American

Academy of Pediatrics' recommendations for the management of diarrhea in

children. Other studies have identified inaccuracies in poor website authority

(Earl 1998) and lack of scientific review (Pew Internet 2000) to name just a few.

Proof of Harm. McLeod (1998) has asserted that the Internet is no more

inaccurate than many traditional sources of health care information.

Furthermore, online proponents argue that few reports of actual harm from using

online health information have been noted (Baur and Deering 2001). The first

reported case of harm occurred early in 2002 when parents followed inaccurate

Internet advice for treating their child's diarrhea. The child required two-days of

inpatient care as a result (Crocco et al. 2002).

In January 2001, in an effort to begin systematically collecting such

"evidence of harm," the University of Heidelberg's Unit for Cybermedicine and E-

Health created the Database of Adverse Events Related to the Internet (DAERI).

DAERI's objective is to assemble a collection of case studies of patients harmed

by online health information in order to identify the magnitude of the issue and identify methods for minimizing the risk to health information consumers (DAERI n.d.).

Health Seekers and Quality Information

In addition to the Internet's limitations, the professional literature expresses concern over the public's ability to not only retrieve but also select valid information (Adelhard 1999; Pereira and Bruera 1998; Sonnenberg 1997). People may experience difficulties with health information, including how to interpret conflicting or differing information, how to judge reliability, and how to decide what to do when confronted with many choices (Deering and Harris 1996). Risk notes that …

> we expect a lot [from] seekers of health information. They must learn how to critically appraise information, determine its relevance and validity of context, compare various sources of information for cross validation and really care about quality. […] Their indifference and ambivalence will continue to be formidable obstacles (2002, 601).

Results from the latest Pew Internet study validate these concerns. The *Vital Decisions* study (2002) focused on users and how they decide what information to believe, what advice to act on, as well as, what strategies health seekers use to separate good from bad quality information. Given that roughly 70% of health seekers report that the health information they find influences their treatment decision (Berland 2001), issues of quality should be of paramount importance. However, the Pew study results reveal different priorities among health seekers.

Most health seekers find information on their own. 91% of information seekers prefer starting with a general Internet search rather than relying on recommendations. Only 14% will eventually follow through on viewing health professional recommended sites (Pew Internet Project 2002). As a result, seekers are not starting out with credible, verified sources.

Most seekers (86%) prefer to start at a general search site (e.g., Yahoo or AOL), browse through an average of two to five health websites, and spend an average of thirty minutes per search (Pew Internet Project 2002). Despite using an unfocused strategy, 82% of health seekers are satisfied that they are retrieving what they wanted most of the time or always. Only 6% were unable to find the information they wanted (Pew Internet Project 2002).

In terms of what website features are important to users, the results show that the quality issue is a tradeoff for convenience. In the Princeton Survey, *A Matter of Trust* (2002), 80% of respondents said they want the site to be easy to navigate and only 19% believe a seal of approval is important.

The *Vital Decisions* study also confirmed the public's lack of concern over website quality. In deciding which sites to trust, only 50% of health seekers are "vigilant" or "concerned" about verifying a site's quality (2002, 23). The remaining half of health seekers simply relies on common sense. One explanation for this casual approach may stem from the fact that 72% of health seekers "… believe all or most of the health information online" (Pew Internet Project 2002, 6). "If it wasn't true, they wouldn't let it be out there on the Net" (Block 2001, 23). As Block notes, users do not understand that no 'they' exists to monitor the Internet

(2001). Finally, 50% of users say that similar information found among multiple sites will increase their confidence in the information's credibility. Unfortunately, most consumers do not realize that much of the online health information is syndicated (Pew Internet Project, 2002).

Despite the above data, the Pew Internet report (2002) also showed that 73% of health seekers have, at some point, rejected health information. The top three reasons for dismissal include: (1) too commercial, 47%; (2) unable to determine source, 42%; and (3) unable to determine when information was updated, 37%. Other miscellaneous reasons include poor website design and a lack of seal of approval.

Quality Initiatives for Health Websites

Given the potential for poor quality information on the Internet combined with the seeker's lack of interest or ability to distinguish the "wheat from the chaff" (Hall 1998, 60), various organizations have developed methods for evaluating and rating the quality of health websites.

Scope of Initiatives. Countless online health quality initiatives have been developed since their emergence in 1996. Depending upon how one defines the type of initiative, they can range from 13 (Risk and Dzenowagis 2001) to 47 (Eysenbach, Powell, et al. 2002). The range of organizations involved in developing these criteria is staggering – medical societies (American Medical Association), non-profit organizations (Biome, Hi-Ethics, HON, MedCertain), academic institutions (Emory), national governments (European Union, United

States HealthFinder), and even international organizations (World Health

Organization).

The quality initiatives have been categorized by both Wilson (2002) and

Risk and Dzenogawis (2001) based on the type of mechanism used to evaluate

the website.

1) *Codes of conduct* provide both consumers and site providers with quality guidelines for assessing whether a site is following "good practice." The Health Summit Working Group (2000), the American Medical Association (2002), and the Internet Healthcare Coalition (n.d.) have all developed their own codes.

2) *Quality labels* use codes, but the site provider must formally apply for the quality logo and commit to adhering to the principles. The HONcode developed by the Health On the Net Foundation provides a voluntary standard for providers of medical and health information on the Web. The Code of Conduct includes eight ethical principles related to author credentials, currency, confidentiality, source reference, funding and advertising policy. Sites adhering to these principles are allowed to display the HON logo (Health on the Net Foundation 1997).

3) *Third-party certification* also awards quality or accreditation labels, but a third-party such as MedCertain (n.d.) or URAC (Health Website Standards 2001) conducts the certification for a fee.

4) *Tool-based user evaluation guide*s enable the consumer to check if a site complies with certain standards by completing a predefined questionnaire yielding a quality score.   The British DISCERN (Charnock 2001) and Emory's Wellness Instrument (Teach 1998) are examples.

5) *Filter websites,* like OMNI (2001) and Medical Matrix (n.d.), offer the closest thing to peer review on the Web. Editorial boards identify and review selected websites for their quality and relevance to the intended audience. These sites are then classified and indexed in a database to improve retrieval.

Quality Criteria. Despite the different types of mechanisms and range of terminology used, Kim et al's. (1999) review of 29 rating tools reveals that the initiatives' commonalities outweigh their differences. Of 165 identified criteria, 80% could be grouped under twelve specific categories (table 1).

Table 1. Quality Criteria Factors	
Category	**Indicators**
Content of site	quality, reliability, accuracy, scope, depth
Design and aesthetics	layout, interactivity, presentation, appeal, graphics, use of media
Disclosure of authors, sponsors, developers	Identification of purpose, nature of organization, support sources, authorship, origin
Currency of information	frequency of update, freshness, maintenance of site
Authority of source	reputation of source, credibility, trustworthiness
Ease of use	usability, navigability, functionality
Accessibility	ease of access, fee for access, stability
Links	quality of links, links to other sources
Attribution	present clear references, balanced evidence
Intended audience	nature of intended users, appropriateness for users
Feedback mechanisms	availability of contact information, contact address
User support	availability of support, documentation for users

Source: (Kim *et al*., 1999, 648)

Initiatives' Quality Under Fire. A handful of recent studies have begun to assess the initiatives themselves. One of the three primary criticisms is that the reliability and validity of the instruments are unknown (Baur and Deering 2000; Kim et al. 1999; Eysenbach, Powell, et al. 2002; Jadad and Gagliardi 1998). In the Jadad and Gagliardi (1998) study of 47 rating instruments, only 14 described the criteria used and none provided information on the instrument's construct validity.

Secondly, meeting the quality criteria does not necessarily measure nor ensure the provision of accurate information. In the Impicciatore et al. study, McLeod (1998) points out that the recommended inconsistencies were advocated on pages that adhered to accountability and currency principles. This supports Eysenbach and Diepgen's (1998) comment that criteria such as qualifications, reliability, and currency can only be used as indirect indicators of quality.

Finally, the most significant criticism is the burden placed on the health information user, whether health professional or consumer. Wilson summarizes the situation well,

> It can be argued that these tools assist consumers to identify information that meets their subjective understanding of quality. However, …that assumes that consumers have time, energy, and inclination to use the tools appropriately. The greatest challenge is not to develop yet more rating tools, but to encourage consumers to seek out information critically and encourage them to see time invested in critical searching as beneficial (2002, 600).

Quality will always remain an inherently subjective concept. But as Kibbe et al. state, while "meeting these standards alone … does not guarantee that the use of the recommended best practices will bring about the desired results, … they are a reasonable first step" (1997, 685).

Libraries and Consumer Health: An Evolving Role

Rees in his seminal *Consumer Health Information Sourcebook* concludes that "[these problems] reinforce the need for intermediaries," like libraries (2000, 42). Librarians because of their knowledge of and skills in identification,

selection, organization and dissemination of information play an important role in providing consumer health information (Dahlen 1993).

  <u>The move towards consumer health</u>. Studies back in the 1970s and 1980s documented consumer demand for authoritative, current health information (Baker and Manbeck 2002). Public, hospital, and academic health science libraries began, to varying degrees, to address this need depending upon their missions and available budgets (Baker, Spang, and Gogolowski 1998; Calabretta 1996; Calvano 1996; Dahlen 1993; Earl 1998). Back in 1974, the Tulsa-City County Library was one of the first libraries to offer a consumer health collection (Gann 1991).   More recently in the 1980s and 1990s, the ability to leverage both expertise and resources has promoted the popularity of multi-type library consortiums (Dahlen 1993; Hollander 1996).

  The impetus for further library involvement in consumer health issues came as a result of two national professional efforts. First, in 1984, the Medical Library Association's (MLA) creation of the Consumer and Patient Health Information Section (CAPHIS) represented the organization's acceptance of consumer health issues as part of a medical librarian's responsibilities (Baker and Manbeck 2002). The CAPHIS group provides a formal infrastructure for libraries offering consumer health information to share knowledge and experience. The Medical Library Association (1996), in conjunction with CAPHIS, developed a Policy Statement outlining six key roles for librarians: 1) collection management, 2) knowledge and resource sharing, 3) advocacy, 4) access and dissemination of information, 5) education, and 6) research.

In addition, the National Library of Medicine (NLM) officially launched its support for CHI with the 1998 "Plan to Increase Public Access to Health Information on the Internet" (Wood et al. 2000). This plan provided financial support to public and medical libraries to develop their consumer health collections. More recently, NLM incorporated consumer health into their strategic plan through their goal to increase the public's awareness and use of NLM services (National Library of Medicine 2000).

Health information seeking in libraries. Anecdotal and statistical evidence has supported the need for libraries to provide health information. Baker and Manbeck (2002) quote a 1995 Maryland study that showed respondents did not use county public libraries for their consumer health needs because they did not think the library carried the relevant information nor was a likely source for this type of information. Deering and Harris (1996) quote studies estimating that as many as 10% of all public library reference questions are health related, totaling almost 52 million health inquiries a year. Thus, health issues are reported as being among the top three to five concerns of library users. Deering and Harris (1996) report on a Reference Point Foundation study where 60% of focus group users said libraries were among their preferred sources for health information.

Libraries move consumer health online. With the realization of the Internet's disadvantages, several authors called for librarians to "tame the infomonster [and] build a web resource with links to high-quality, locally relevant medical information" (Schneider 1998, 71). Eysenbach and Diepgen advocate that "…stairways for the consumer should be built, guiding consumers to high

quality information" (2001, 13). Lindbergh (1998) believes that users can save time and get better results if they start their searches with highly reliable library health directories. In addition, since these directories would be regularly updated, users would be protected against broken links. Gillaspy (2000) suggests that developing a library Internet site is a positive way of augmenting the consumer health collection when faced with budget constraints.

The literature offers numerous examples of library-related online consumer health initiatives by libraries. Four of the more notable efforts include MedlinePlus (Fitzpatrick 1999), HealthInfoNet (Smith 2001), NetWellness (Guard et al. 1996; Morris et al. 1997), and NOAH (Gallagher et al. 2000; Voge 1998). An historic example of the explosive public demand for consumer health information was evident when NLM made Medline, the biomedical literature database, freely available to the general public. Searches soared from 7 million in 1997 to 120 million just one year later. Consumers were estimated to have accounted for one-third of the increase (Miller, LaCroix, and Backus 2000). To meet this evident need for consumer-oriented health information, NLM launched MedlinePlus in 1998.

Most of the library science literature focuses on funding, technical development, marketing, and resource selection for developing a physical consumer health information service (Gillaspy 2000; Horne 1999; Longe 2000; Moeller 1997; Pittman 2001). When the quality initiatives proliferated in the late 1990s, library professionals started using them for two purposes. First, as tools to evaluate the online resources the librarians would be selecting for their own

websites. As well, the initiatives provided librarians with a checklist to educate

their users on how to evaluate health websites. (Baker and Manbeck 2002;

Block 2001; CAPHIS 2001; Durkin 2001; Rees 2000). The usual quality

evaluation elements reappear: accuracy, audience, authority, content, currency,

design, disclosure, interactivity, organization, privacy, and purpose. Lynne Fox

even devised a clever mnemonic for consumers to remember the quality criteria

– DOCTOr, representing design, other, content, technical, and origin (2000).

    <u>Creating Quality Library Consumer Health Sites</u>.   Only within the past two

years have a few resources emerged focusing attention on using the criteria as

guidelines for developing a quality health website. *Web Wisdom: How to*

Evaluate and Create Information Quality on the Web is one of the first books to

begin applying quality criteria to website development.

> Web authors have information they want to share with others, and they
> need to present this information so it can be recognized as reliable,
> accurate, and trustworthy. What elements of design cheapen or weaken
> the authority of the site? … enhance its usefulness? (Alexander and Tate
> 1999, xiii,1)

    In their book, Alexander and Tate (1999) provide a checklist of basic

elements that guide Web authors to create reliable and trustworthy pages. The

checklist encompasses eight elements, many of which are similar to the criteria

used by the quality initiatives: 1) authority, 2) accuracy, 3) objectivity, 4)

currency, 5) coverage and intended audience, 6) interaction and transaction

features, 7) navigational aids, and 8) non-text features.

    Specifically aimed at developing a library consumer health website, the

Consumer Health Reference Service Handbook chapter on "Building Successful

Consumer Health Web Sites for Your Users" is one of the few that exist in the

library science literature. Barclay and Halsted (2001) identify four key steps in

creating a quality website:

1) Identify a clear purpose by gathering input from the library's intended audience. Having a mission ensures that the site content stays focused and makes the site more likely to be used.

2) Understand your users by soliciting continuous feedback through mechanisms on the website.

3) Provide quality content by balancing the amount of original and linked health information. Ways to create original content include the following:

   - Provide information about the website itself (e.g., mission, process, …).
   - Convert existing print health information to online format.
   - Repackage information to make it either more convenient, understandable, or accessible.
   - Create pathfinders or information guides.

   Other suggestions for creating original content include:
   - Scan public documents into a relational database to facilitate access (Dahlen 1993).
   - Digitize video collection for hospital-wide access at the bedside (Pittman 2001).
   - Consolidate health education calendars (Pittman 2001).

   "Websites that are nothing more than repositories of links are old news" (Barclay and Halsted 2001, 179). Therefore, to make the linked content more useful and distinguish the site from others, Barclay and Halsted suggest annotating the links to clarify their value. More importantly, focus the links on local health information and resources.

4) Follow a few basic design rules such as keep the format simple; follow typical web conventions; create multiple access points by using subject headings, site maps, and search features; and use a consistent page layout.

   One of the Consumer Health Workshops suggests the following categories for a consumer health digital library (NN/LM Consumer Health Information Workshop 2002).

- Complementary and alternative medicine
- Consumer health
- Directories
- Easy to ready resources
- Journals
- Listservs and newsgroups
- Minority health
- Medical dictionaries and terminology resources
- Online support groups

Barclay and Halsted (2001) suggest that one way to draw attention to the website is to provide a well-labeled link from the institution's homepage to the library's consumer health website.

In *Consumer Health Information for Public Librarians*, Baker and Manbeck note that "web design is beyond the scope of this book," but do recommend that website developers include a disclaimer stating that the health information is not a substitute for medical advice and that readers should discuss any information with their healthcare provider (2002, 97). In addition, their chapter on 'Internet Resources' discusses website maintenance. Librarians need to not only regularly repair dead links, but also continuously add new content (Baker and Manbeck 2002). A Web editorial committee is important in maintaining an updated and well-designed website. Finally, training consumers on how to effectively search the Internet for health information should be a core responsibility of any librarian (Baker and Manbeck 2002).

Marylaine Block's (2001) article also provides further suggestions on how libraries can extend their presence online for the benefit of their users. She notes that all the effort libraries have expended on developing their physical consumer health collections is at risk due to the 60 million Americans who are

searching the Internet for health information. As a result, she argues that

libraries need to be where the users are - online.

> "Creating a medical web page is an extension of our service of protecting [users] from bad information. […] Our web pages are how we can remind people that librarians understand what good information looks like and how to find it, that we are uniquely trustworthy information brokers..." (Block 2001, 24)

Among the recommendations Block (2001) makes for developing a

consumer health library website include:

- An explanation of why the chosen linked sites can be trusted and the standards applied in the selection process.

- Tutorials explaining how to search for online health information and how to decide whether to trust it.

- Links to the library's catalog and databases.

- 'Ask an expert' or reference librarian service.

- Pathfinders to remind users of what are available in the library.

RESEARCH METHODOLOGY

Since no official or comprehensive directory exists of libraries offering online consumer health information, the selected websites were drawn from three sources: (1) CAPHIS Consumer Health Library Directory (www.caphis.mlanet.org/directory/index.html), (2) MedlinePlus Consumer Health Libraries (www.nlm.nih.gov/medlineplus/libraries.html), and (3) National Network of the Libraries of Medicine (NN/LM) Consumer Health Libraries Having Web Sites (http://nnlm.gov/scr/conhlth/chlibsite.htm). All three listings were completely captured on 30 June 2002.

CAPHIS Consumer Health Library Directory. The directory is a listing of Consumer and Patient Health Information Services (CAPHIS) member libraries around the world. Each member voluntarily submits and is responsible for updating its record in the Directory. The record update field shows that the majority of the entries have not been revised since they were originally created in June 2001. The CAPHIS page itself does not indicate when the database is updated. The CAPHIS website offers two ways to search the directory – one for consumers seeking a library in their area and the second for librarians wanting comparative management information. This study used the "consumer" search form and retrieved the list for all 218 libraries in the database at the time.

Each record in the consumer listing provides, when available, the uniform resource locator (URL) for the consumer health information service (CHIS)

website, the library website, and the institutional website. Several libraries offer

consumer health information but do not have an online presence.

MedlinePlus Consumer Health Libraries. MedlinePlus, the National

Library of Medicine's (NLM) consumer health portal, provides the public with a

directory of libraries offering a consumer health information service. Although no

indication is given when the list was originally compiled, the page does show

when it was last updated. Unlike the CAPHIS site, libraries submit their interest

to be listed and NLM decides to include the site if it meets certain criteria. The

CAPHIS newsletter *Consumer Connections* details the NLM's guidelines for

including libraries in the Consumer Health Libraries directory (Miller 2001).

Libraries are included if they meet the following criteria:

- The consumer health information service and resources are brought together on a web page and considered a distinct service. Description of services, online services, eligible users, and contact information should be included.

- The consumer health service preferably has its own page, but at a minimum, is clearly linked from the library's main page.

Libraries will not be included in the directory if:

- The library's web page only lists links to consumer health sites and does not offer consumer health information resources or services.

On the download date, the number of libraries in the MedlinePlus directory

totaled 110.

NN/LM Consumer Health Libraries Having Web Sites. Through an

Internet search for consumer health libraries, the National Network of Libraries of

Medicine (NN/LM) identified thirty-six libraries across twenty-four states. The

only evident criterion for inclusion on the list is that the libraries have an Internet

presence. Confusingly, the listing page shows two update dates: "revised: April 2001" and "last modified on February 5, 2002."

Final Compiled List. Although the total number of sites extracted from the three lists amounted to 364, after accounting for several factors, the resulting number of final library sites analyzed was 118. Appendix A itemizes the number of records removed due to duplication, URL errors, lack of a URL listing, etc. Appendix C provides a comprehensive list of the library sites excluded from the final review.

Appendix B lists the 118 library sites included in the final analysis. The URL noted in the Appendix acted as the main entry point to the consumer health section or site. These sites share the following criteria:

- The URL for the consumer health library or consumer health information section is easily identifiable.

- At least one form of direct access to the consumer health content (e.g., external links, database access, full-text pamphlets, …) must be provided. If the consumer health site simply describes the services in the physical library and does not include any access to health content, then the site was not included in the study.

- The site is somehow affiliated with a library – public, academic health sciences, hospital, or consumer health service. For example, many hospitals now offer health information pages. However, only those consumer health sites created by the hospital's medical library or a consumer health library within a hospital were included.

Two tools were developed to evaluate how well libraries that offer consumer health information are meeting quality criteria: (1) a quality criteria assessment tool and (2) a minimum quality score chart.

Quality criteria assessment tool. The elements in the assessment tool are derived from the quality criteria and guidelines suggested in both the professional

medical and library science literature. In the latter case, recommendations by Alexander and Tate (1999), Block (2001), and Gillaspy (2000) were incorporated.

Two professional librarians[1] involved in the consumer health field reviewed the assessment tool for inconsistencies and omitted variables. A few revisions were made to the instrument based on their suggestions.

The assessment tool (appendix D) is composed of forty multi-part questions covering four major categories – site profile, context, content and structure.

Site Profile. To gain a better understanding of the nature of the library consumer health sites being evaluated, the tool gathered three descriptive characteristics of each website. First, sites were classified based on the type of organization hosting the consumer health information – public library, academic health sciences library, hospital library, consortium, hospital, or other type. Secondly, the tool also captures the nature of the consumer health site. Four possible types include a virtual-only CH service (e.g., NOAH), an identifiable CH section (either a webpage or subsite) of a main library website, a website for a consumer health library, or a library website that does not have a definable CH section, but integrates the information within regular resource categories. For example, a "Databases" heading would include access to both professional as well as consumer databases. Finally, the number of total consumer health navigation and content pages were tallied to give an indication of the site size devoted to consumer health.

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[1] Thanks to Christie Silbajoris, M.L.S. and Peggy Hull, M.L.S. of the University of North Carolina at Chapel Hill Health Sciences Library for their helpful feedback.

Context. Context establishes the framework within which the information is being used. It encompasses the elements of purpose, authority, and disclosure.

Purpose. Users should be able to readily identify the purpose of the consumer health site, its scope, and intended audience. The sites were evaluated on whether they provided an introduction or mission statement explaining the purpose of the consumer health site either directly on the main CH page or through a descriptive link (e.g., "About Us" or "Mission").

Authority. Authority establishes whether the source, either the library or the linked external resource, is qualified to provide the information. To ensure the library is accountable for its content, each site was assessed on whether they indicated the person or group responsible for the content and their credentials, included contact information, and described the criteria or process for selecting the consumer health content.

To validate the authority of the external information sources, the tool collected information on which types of organizations were being linked, whether the linked sites had any quality accreditation (e.g. HON), and the extent to which the linked sites were well annotated.

Disclosure. Sites were rated based on whether a disclaimer was present on each consumer health content page indicating that the health information should not replace seeing a physician. Furthermore, the tool determined the form in which the disclaimer was presented – as a link to a disclaimer page or as a text paragraph within a content page.

In addition, site providers need to be accountable for how they collect and use any personal information provided by the health seeker. Therefore, the site was rated on whether a privacy and/or confidentiality statement was prominently displayed.

Content. Content addresses the nature of the information being provided in terms of its scope, accuracy, currency, and relevancy.

Scope. Scope encompasses both the breadth of subject material to be covered and the depth of coverage for each subject. Breadth is based on the range of health content being offered. Health content comes in two forms – direct and indirect. Direct content means that the user immediately gains access to the consumer health content. Database access, e-books, full-text materials, links to health websites, online audiovisual materials, and tutorials offer direct content. Indirect content includes ask an expert (via e-mail), calendars of events, catalog access, e-mail reference, information packets, pathfinders, and resource directories. These intermediary forms require the individual to wait a certain period of time before they can receive the health content. Depth of content explores the number of links to external health information.

Accuracy. Traditionally, accuracy refers to the degree that the health information adheres to generally accepted medical practice. However, since the library websites are predominantly linking to health information and not providing actual health advice it is not an appropriate measure for this study. Therefore, to apply this element to library sites, accuracy is defined by the extent to which the

information is free of error as measured by the number of grammar or spelling errors.

Currency. Given the fluctuating nature of the Web, it is important that libraries assure users they will be accessing the most up-to-date information. Two primary indicators of currency include when the CH content page was originally posted and when it was last revised. This information should be specified on each content page. A related element is whether the site provides any indication of what information has been added or changed. The sites were also evaluated on the age of the most outdated page and the most recently updated page on the consumer health section. A final measure of currency is the extent to which both the internal and external links work.

Relevancy. The health content is relevant if it fulfills the needs of the information seeker. A primary measure is whether the CH site provides information for the health seeker on how to evaluate health websites. If so, in what form is it provided – as originally created content or as links to external sources? Similarly, meeting the information needs of special groups has been a central role of libraries. As a result, the sites were also assessed on how well they used headings or annotations to highlight the provision of local health resources, easy-to-read content, foreign language information, and large print materials.

<u>Structure</u>. Structure applies to the site's design and how well format affects the site's accessibility and navigability elements. While this feature does

not directly impact the quality of information, it does influence the user's ability to effectively access and retrieve the information.

Accessibility. Accessibility measures the user's ability to gain access to the site's contents in three ways. First, for users entering from the host institution's main page, a well-labeled link to the consumer health section or site should be available. Secondly, if the site requires additional software (e.g., Acrobat Reader) for viewing health content, a link should be provided to easily download the necessary software. Finally, graphic use should be kept to a minimum to ensure quick downloading of the site. If not, at least a text-only version should be offered.

Navigability. Site layout features can facilitate the user's ability to locate desired information. The manner in which external links are grouped can potentially inhibit a user from finding the desired resource. The more links, the more necessary it is to arrange the websites by subject or organization heading rather than to list the links randomly or in alphabetical order. Also, sites were assessed on how well they used subject headings that make sense from the consumer's perspective. The subject headings used were based on the combined recommendations from Rees, Baker and Spang, and the NN/LM Workshop. The final navigation element is the use of sitemaps and/or search features to facilitate information retrieval.

Score Chart. In order to apply a "score" to each of the libraries, a chart (appendix E) was created to determine how well each of the libraries was adhering to a minimum standard of quality. One point was given for meeting

each of the criterion. A total of 25 points was possible.   The score chart allows

direct comparisons of library performance in meeting the quality criteria, while the

assessment tool describes in more detail what the libraries are doing on the

quality criteria.

RESEARCH RESULTSThe results of this study are organized by the three main quality categories – context, content, and structure. Within each of these categories, results for the minimum quality score, as well as, for each of the elements within the category will be described. In addition, a section is devoted to reviewing the aggregate results of the minimum quality score chart.

Site Profile Characteristics

Host Type and Web Format. Sixty percent of the 118 evaluated websites are hospital-affiliated, either being hosted by the hospital's health science library or by the hospital itself.   Table 2 also shows that academic health science libraries (18%) and library consortia (14%) account for another third of the sites. Public libraries are the most underrepresented, accounting for only 3% of the websites.

Table 2. Host Type by Web Format									
	Virtual		**CH page**		**CH library**		**No CH Section**		**Total**	
Host Type	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Hospital	2		6		29		4		**41**	35
Hospital Library	0		18		11		1		**30**	25
Academic Health Library	0		14		6		1		**21**	18
Library Consortia	7		3		7		0		**17**	14
Public Library	0		0		3		0		**3**	3
Other	1		0		4		1		**6**	5
Total	**10**	**8**	**41**	**35**	**60**	**51**	**7**	**6**	**118**	100

Table 2 also reveals that slightly over half of the websites represent full-fledged consumer health libraries. Hospitals and hospital libraries host the majority of these consumer health library sites. The hospital versions take the

form of a community health information center, community health resource center, patient education center, etc. Another 35% of the sites provide consumer health information as part of an identifiable CH section of a library website. The library is typically a hospital medical library or academic health science library. Ten websites offer a virtual-only consumer health information service. Library consortia typically used this format. Finally, seven sites were included that provide consumer health information, but integrated that information with the other professional health information on the library website. Hospital libraries were more likely to use this format.
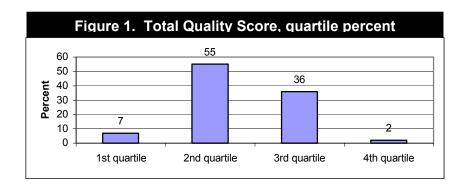
Site Size. In terms of total navigational pages devoted to the consumer health section or site, table 3 shows that the sites tend toward being small. One quarter of the libraries devoted only one page to consumer health and more than fifty percent have less than ten pages. Another quarter had larger sites of over sixteen navigational pages.

Since the entire consumer health section/sites tended to be small, naturally the number of pages actually devoted to consumer health content were small. Forty-two percent of the evaluated websites offered only one page of consumer health information content. 75% of the sites have less than 10 pages of CH content. At the other extreme, twenty-one percent provided health content on more than sixteen pages.
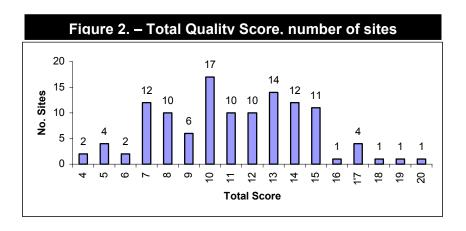
Table 3. Website Size				
	CH navigational		CH content	
Number of pages	No.	%	No.	%
Only one	30	25	49	42
2-5 pages	19	16	18	15
6-10 pages	19	16	13	11
11-15 pages	11	10	5	4
15-25 pages	8	7	8	7
>16 pages	31	26	25	21

Overall Minimum Quality Score

In terms of meeting the minimum quality criteria, among the 118 total library sites evaluated, no libraries achieved a perfect total score of 25 and only two libraries were in the upper 4th quartile with scores of 19 and 20.   The mean total score was 11.2. Figures 1 and 2 show that the majority (55%) of the evaluated sites fell into the 2nd quartile score range, with the scores fairly well distributed across the score range of 7 to12. A strong third of the CH library sites are in the 3rd quartile. However, these sites scored more at the lower end of that quartile, in the 13, 14 and 15 range.

Figure 1. Total Quality Score, quartile percent

Neither the host type nor the online nature of the consumer health information related with achieving a high total score. However, combining the

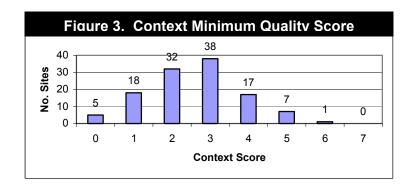**Figure 2. – Total Quality Score, number of sites**

two factors does tend to account for meeting the quality measures. The highest

total scores tended to be by consortiums offering a virtual consumer health

library, with a mean score of 18.4. In addition, the three public libraries offering a

consumer health library website did well, ranking in the top 3rd quartile scoring a

mean of 15. The sites more likely to rate poorly were from hospital libraries

offering a consumer health section on their own website. Their scores averaged

8.5 points.

Among the three quality sections of context, content, and structure, the

evaluated sites scored best on structure and least well on context and content.

Context

Score chart. On measures associated with mission, authority, and

disclosure, no site scored a perfect context score of seven (figure 3). 21% (25

sites) did score within the top half score range of 4 to 7. The remaining 79% (93

sites) of sites fell within the bottom 50%. Five sites did not meet any of the seven

minimum context criteria.

Figure 3. Context Minimum Quality Score

Purpose. A strong 70% of the sites provided some form of mission statement or explanation of the purpose of the consumer health section or site. Of these 82 sites, two-thirds preferred to prominently display the mission statement on the home consumer health page rather than incorporate it under an "About Us" section (table 4).
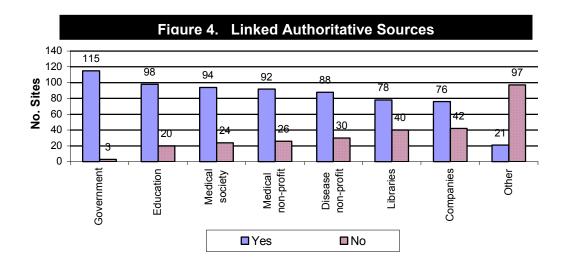
Table 4. Statement of Purpose	Yes		No	
	No.	%	No.	%
	82	70	36	30
Paragraph on main page	55	67		
Under "About Us"-type link	22	27		
Both of the above	5	6		

Authority. The libraries have mixed results in meeting the measures of accountability. Table 5 shows that slightly over 75% of the sites do not name the person or group responsible for the site's content. Of the 25% of the sites that do list a name, most also included the person's credentials, either his/her position title or degree. On a positive note, 80% of the library sites included some form of contact information, usually telephone or email link in case the consumer needed to contact the library for further information.

Table 5. Measures of Accountability				
	Yes		No	
	No.	%	No.	%
Person responsible named	**28**	**24**	**90**	**76**
Name only	4	14		
Credentials mentioned	24	86		
Contact information provided	**95**	**81**	**23**	**19**
CH content specially selected	**48**	**41**	**70**	**59**
"selected resources", but no criteria	32	67		
explanation of selection criteria	16	33		

As well, the library sites varied in how well they accounted for the process used to select the consumer health content (table 5). Only 48 of the 118 sites indicated that the consumer health information was selected. Labels such as "selected links" or "reviewed sites" were the most used indicators of a selection process. Unfortunately, most of these sites failed to explain the criteria or process used to select the items.

Not surprisingly, libraries linked to the top five authoritative sources - government, education/research, medical societies, medical non-profit organizations, and disease non-profit organizations (figure 4).

Figure 4.   Linked Authoritative Sources

Finally, the libraries are also split in how well they describe the value of the resources being linked (table 6). While almost one-half of the sites link to at least one Health on the Net (HON) or other quality labeled site, only three libraries actually note that the linked site has been quality reviewed.

Table 6 also indicates that the library sites tend to provide annotations explaining the value of the linked sites. Of the 67% that provided annotations, almost half of those included annotations for all of the linked sites. The remaining half only provided annotations for select groups of links. Of the 78 sites providing annotations, slightly more than half adequately described the value or purpose of the linked site. The remaining 34 sites need to improve their annotations because they only mention the site's provider.

Table 6. Value of Linked Sources				
	Yes		No	
	No.	%	No.	%
HON, MedMatrix-linked websites	51	45	65	55
Noted as being high-quality sites	3			
No indication of value of HON, et al.	48			
Links annotated	78	67	38	33
All	37	47		
>=50%	12	16		
<50%	29	37		
Descriptive annotations				
Adequately descriptive	44	56		
Need improvement	34	44		

Disclosure. Of the three context items, the library sites scored the best on disclosure. Almost 70% of the sites included disclaimers (table 7). Of these, half mentioned the disclaimer on only one or a few content pages, while the other half placed the disclaimer on every content page.

The disclaimers were typically a few sentences included in the footer or within the text body of a web page. Only one-quarter of the sites used a disclaimer link, usually within the page footer.
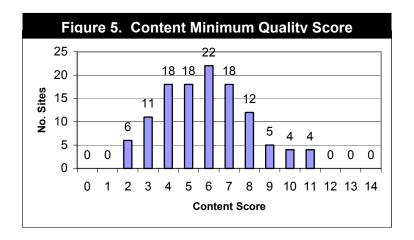
Table 7. Disclosure	Yes		No	
	No.	%	No.	%
Disclaimer provided	**81**	**69**	**37**	**31**
Located on every CH content page	41	51		
Only found on one or a few CH pages	40	49		
Disclaimer format				
Both link and paragraph description	6	7		
Paragraph description only	55	68		
Link only	20	25		
Privacy statement	**14**	**12**	**104**	**88**
Requested personal info.	12		36	
General statement	2			

Surprisingly, table 7 shows that libraries scored extremely low on providing confidentiality statements on their consumer health websites. Only fourteen sites or 12% of the 118 included a privacy or confidentiality statement. Of these fourteen, two provided the statement as part of a general disclosure paragraph. The remaining twelve posted the statement on the interactive form requesting personal information. The form was usually associated with an "ask a librarian" or "information request" service. Of note are the 36 sites that requested personal information, but did not include any privacy or confidentiality statement.
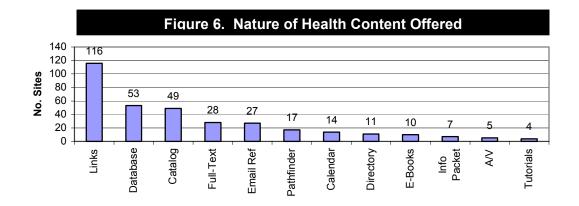
Content

Score Chart. In terms of meeting the content minimum quality criteria of scope, accuracy, currency, and relevancy, none of the evaluated websites achieved the top score of fourteen in this category. The majority of sites cluster

around the score range of 4 to 8, barely meeting even fifty percent of the

minimum criteria (figure 5).

Figure 5. Content Minimum Quality Score

Scope. The range of health content predominantly includes links to

external health websites, followed by database access, catalog access, and

original full-text content (figure 6).

Figure 6. Nature of Health Content Offered

Since external links form the primary means of providing consumer health

information, the number of linked health websites is important. Table 8 shows

that half of the 118 evaluated sites link to more than fifty external health sources.

Table 8. Number of Linked External Health Websites	
No external links	2
1-10 links	19
11-30 links	18
31-50 links	19
>50 links	60

Accuracy. More than 75% of the evaluated sites contained at least one

grammar or spelling error (table 9). Only 28 of the 118 sites ensured that the

content had been proofread for errors.   The errors did not depend on the size of

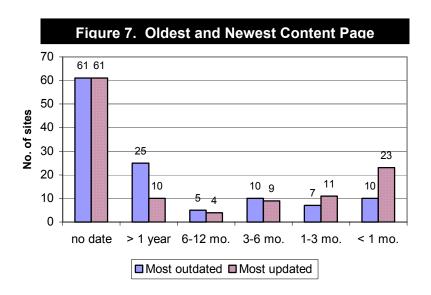the site. Smaller sites were just as likely to have errors as larger sites.

Table 9. Grammar or Spelling Errors		
	No.	%
Yes	90	76
No	28	24

Currency. Table 10 shows that library sites also scored poorly in noting

the currency of the web pages. Only one site included the original posting date

on the consumer health content pages. No other sites indicated when their

consumer health pages had been originally posted.

Table 10. Measures of Currency				
	Yes		No	
	No.	%	No.	%
Original posting date	**1**	**1**	**117**	**99**
Latest revision date	**57**	**48**	**61**	**52**
On each CH content page	46	81		
On one or a few pages	11	19		
Indicator of updated information	**10**	**8**	**108**	**92**
Symbol or annotation	5	50		
"What's New" section	5	50		
Operational links				
Internal	102	86	16	14
External	41	35	77	65

Libraries were almost equally split in whether they included a revision date on the content page. On the positive side, of the 57 libraries that did indicate an update, 81% posted a date on each consumer health content page. It was, however, difficult to determine if the revision date was for the page or for the site as this was not always indicated.

For those library sites with revision dates, the dates indicate fairly old content pages (figure 7). For 25 sites, the most outdated page is more than a year old. For pages with the most recent update, ten sites still had pages more than one year old. At the other end of the scale, the most outdated page on ten sites was less than one month old and the most recently updated page was less than one month old for 23 sites.

Figure 7. Oldest and Newest Content Page

Methods, such as symbols, annotations, or a "what's new" section, to highlight new or revised content were rarely used. Table 10 illustrates that only

ten sites chose to employ these mechanisms to raise user awareness of new or revised information.

On the last measure of currency, the libraries also had split results (table 10). Most of the library sites (86%) had operational internal links. However, a significant number of libraries, 77 of the 118, had at least one non-operating external link. Surprisingly, recently updated pages were just as likely to have inoperable external links as older pages.

Relevancy. Disappointingly, only one-quarter, or 32 of the library websites provided any information to the user on how to evaluate the quality of health information (table 11). Between writing their own content or using links to external sources, libraries more often chose to link to the information. However, 13 of the 32 sites chose to do both.

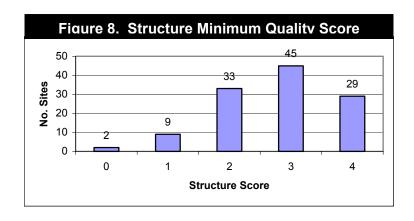| Table 11. Teaching Quality Assessment				
	Yes		No	
	No.	%	No.	%
How to evaluate the quality of health websites is provided	32	27	86	73
Yes, own written content	7	22		
Yes, links to external criteria	12	38		
Both links and own content	13	40		

Table 12 confirms that libraries are also not highlighting content that meets the needs of special groups. Only half of the sites indicate they are providing local health and foreign language content. Libraries tend to use descriptive annotations rather than headings to indicate that type of information is available.

The library sites provide even less evidence of offering low literacy or large print information. More than 90% of the sites did not indicate they included information that would meet the needs of these special populations.

Table 12. Meeting Special Needs	Yes		No	
	No.	%	No.	%
Local health/resource content	**59**	**50**	**59**	**50**
Description indicator	31	53		
Heading indicator	28	47		
Foreign language content	**60**	**51**	**58**	**49**
Description indicator	38	63		
Heading indicator	22	37		
Easy-to-read content	**11**	**9**	**107**	**91**
Description indicator	7	64		
Heading indicator	4	36		
Large print content	**2**	**2**	**116**	**98**
Description indicator	1	50		
Heading indicator	1	50		

Structure

Score Chart. Of the three minimum quality score categories, the libraries rated best on structure (figure 8). Twenty-nine sites met all four minimum quality criteria associated with providing an accessible and navigable website. Only two did not manage to meet any of the four criteria.

Figure 8. Structure Minimum Quality Score

Accessibility. Almost all the library or host sites' home pages provided direct access to the consumer health section (table 13). Most sites used a well-labeled link, such as "Consumer Health" or "Consumer Health Library" to lead users to the consumer health information.

While most library sites did not provide content requiring the use of additional software (e.g., Acrobat Reader, Real Player, etc.), for those sites that did, only half provided a link to download the necessary software. A strong 97% of library sites did use minimum graphics for quickly downloading the site.

Table 13. Measures of Accessibility	Yes		No		N/A
	No.	%	No.	%	No.
CH section accessible from host home page	**105**	**97**	**3**	**3**	**10**
Yes, but requires navigating through several links	28	27			
Yes, well-labeled link on host's home page	77	73			
Link provided for any additional software	**11**	**50**	**11**	**50**	**96**
Site uses minimum graphics for quick download	**105**	**97**	**13**	**3**	

Navigability. As revealed in figure 9, the more external links, the more likely the library site uses either subject or subject and organization headings to organize the links. Similarly, for sites offering fewer links, the links are either listed randomly or in alphabetical order.
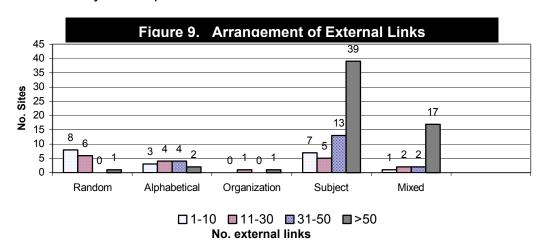

Figure 9. Arrangement of External Links

Table 14 highlights the preferred subject headings used to organize the external links. The largest single categories were general health (fitness, nutrition, wellness, …); specific diseases (AIDS, cancer, diabetes, …); health groups (children, men, women, …) and medications. Of interest, is how relatively few library sites included links for locating doctors, defining medical terminology, or offering support group information. The "Other" category included a diverse range of topics: alternative medicine, care giving, death, dental, genetics, immunizations, mental health, nutrition, statistics, and travel to name just a few.

Table 14. Subject Headings	
	No. Sites
Other	76
General Health	67
Specific Diseases	66
Health Groups	52
Medications	50
Organization	35
Foreign Language	34
Health System	33
Find a Dr.	32
Reference	31
Local Resources	31
Clinical Trials	29
Medical Procedures	27
Support Groups	26
Easy to Read	4

The final measure of navigability is whether the library site provides a mechanism for locating information within the site (table 15). 56 of the 118 sites do offer either a site map or search feature to facilitate user access to the site's information. On the other hand, 53% of the sites do not provide that function.

Table 15. Site Map or Search		
	No.	%
Yes	56	47
No	62	53

DISCUSSION

Given the amount of discussion in the library science literature informing librarians about the quality criteria for assessing health websites, libraries would be expected to meet those criteria when offering their own consumer health websites. However, this study demonstrates that libraries have not translated the criteria into useful guidelines for developing their own quality health website.

While no one determining factor seems to account for the library scores, three elements did relate with how well libraries fulfilled the minimum quality criteria: (1) specific combination of host type and online representation, (2) existence of a mission statement, and (3) user instruction on evaluating health websites.

It would be reasonable to assume an academic health science library would conceivably score higher than a public library or that a website for a consumer health information service should perform better than a site with just a few consumer health pages. However, no relationship appears to exist between host type or online format and score performance. Only when the two elements form specific combinations is there a connection with score outcomes.

For example, the consortium-developed virtual consumer health websites most likely do better because the initiative requires extensive planning and teamwork. Furthermore, and probably more importantly, the time, resources, and effort to develop the site are shared among several colleagues. At the other end of the spectrum are consumer health libraries in hospital settings. Their comparatively lower ratings may be due to the consumer health website being

hosted through the hospital's website.   Often times, the hospital's marketing or information systems departments are responsible for the design, development, and upkeep of the institution's website. Thus, libraries have little control over their own website maintenance and must adhere to the hospital's web template. As well, limited staff and demands on staff time to maintain a website could also account for the lower scores in hospital library and consumer health library settings.

Dahlen (1993) says that the library's involvement in disseminating consumer health information is dependent upon the organization's mission statement. Indeed, sites with an introduction or mission statement did have relatively higher mean scores (12.54) than those that did not (9.58). Perhaps having a sense of direction and purpose to the website provides more structure when considering what content to include and how to organize it.

Finally, and in some ways rather obvious, if the library provided information for users on how to assess the quality of health websites, then the library on average scored higher - an average score of 10.5 for non-providers compared to an average 12.7 points for libraries offering evaluative information. Furthermore, libraries that wrote their own content scored slightly higher, 13.6 in contrast to those libraries just providing links, 12.0. Although it is unknown whether these libraries consciously incorporated the quality criteria when designing their site, perhaps the mere knowledge of the criteria's existence leads the people responsible to integrate the quality elements into their sites as a matter of fact.

Since websites require considerable commitment of resources, staff, and time, undoubtedly shortages in any one or all of these elements may account for a portion of the low score levels. Yet, it is apparent that more education, through articles, workshops, and guides could benefit the profession. Emphasis should be placed not just on design and navigation features, but also especially on content and how to make the website unique and desirable for consumer health information seekers.

Lessons to Learn

Looking at the nine quality elements from the user's perspective provides an intuitive understanding of the value these elements can contribute to a library's website. Examples of how libraries are or are not incorporating these guidelines can prove instructive for others.

Why does this site exist? Why is it relevant to me? Regardless of the size of the site, whether one or multiple pages, the site should include a statement of purpose. Library sites with one or a few consumer health pages were less likely to include an introductory paragraph. Waterbury Hospital's Health Resource Center offers only one page of links to "resources for consumer health information." Yet, their brief introduction, "The Waterbury Hospital Health Center Library provides these links to useful health, disease, and wellness information sites for you," explains why the library has made an effort to provide the page and address user needs.

Who is responsible for this content? What expertise do they have? While libraries generally fall in the category of trustworthy organizations, to affirm credibility, libraries should identify who is responsible for the page content. The National Jewish HealthInfo Center provides a good example with the following: "Rosalind F. Dudden, M.L.S. AHIP, Health Sciences Librarian." In addition to validating the person's expertise to provide the health content, including credentials is another way to educate users on the level of a librarian's training.

What factors were taken into consideration when choosing the content? Who helped select the content? Including the process by which the content is reviewed and selected indicates to users a thoughtful consideration of the myriad of online resources. It also provides an opportunity to educate users on how to use the quality criteria for their own website evaluations. Again smaller sites were less likely to explain this process. The one page "Consumer Health Connection" of the Las Vegas/Clark County Library District offers a good illustration:

> The Internet sites selected for this Web page do not include every Web page on health. This page is a selected list of authoritative sources designed to assist the user in locating current health information to better understand his or her condition. While these direct Internet sites have been evaluated for quality, accuracy, and currency, we cannot vouch for information linked from each Website.

What makes these links worthwhile? Why were they selected over other sites?   It is not surprising that libraries would have links to the usual authoritative organizations – government, professional organizations, medical societies, etc. However, it was unexpected that very few links were included to HON or other accredited sites. Even those sites that did include HON-endorsed links did not

highlight this benefit. As the URAC study (July 2001, par. 2) shows over 90% of

consumers prefer a "search engine that indicates whether health websites are

accredited according to rigorous standards."   As an interesting side note, two

websites, Akansas' HealthInfoNet and the Botsford General Hospital's Library

and Internet Services themselves display the HON logo, certifying that their

websites adhere to the HONcode principles.

Annotations also contribute to the user's understanding of the specific

value of the content being provided. Although time consuming, especially for a

large number of linked sites, a brief sentence can explain the unique benefit of

each link and shows users that time has been taken to provide a comparative

assessment of sites. Eli M. Oboler's Consumer Health Information Guide is one

page, but their external links are briefly, but well-annotated.

> *MedWeb: Consumer Health*. Links to more than 50 electronic newsletters,
> magazines, and other health publications.

> *Nursing Home Compare*. Size, staff, inspection results,
> Medicare/Medicaid participation, residents and contact information for
> specific nursing homes.

Annotations are not just useful for linked websites. Many users do not

really understand databases, so a brief description can provide much needed

clarification. Numerous sites provide database access and list the databases

without any explanation of their content nor mention of needing a password to

gain access. The Health Sciences Library of Lowell General Hospital addresses

this latter issue by placing an icon of their library card next to the appropriate

resource. The icon indicates, "The LGH library card is valid where you see this

symbol." Several libraries also tend to list both PubMed and MedlinePlus without

annotations. Since these database names are not self-explanatory, a brief

description would be useful for users to distinguish between the two sites,

especially explaining the more professional nature and more sophisticated

searching of PubMed. Again, the Eli M. Oboler Health Sciences Library provides

good examples:

> *PubMed*. Technical medical information used primarily by health care professionals but includes small number of consumer health journal articles, a few available in full-text.

> *MEDLINEplus*. From the National Library of Medicine, this Website provides links to rigorously evaluated sites. They include health topics, drug information, dictionaries and directories, and other organizations.

> <u>What should I be careful of when I use this information</u>? Perhaps due to

the potential for legal liability, host organizations need to ensure that a disclaimer

is available. However, in most instances that information is usually posted as a

small font link in the web page footer. It would be more beneficial to the user if

the disclaimer is included on the main CH page and on other relevant health

content pages. For example, Dartmouth's Consumer Health Resources page

starts with the following paragraph:

> **Please note:** the resources presented here are intended to provide public access to a wide range of health and disease information and should not be construed as medical advice or be used as a substitute for consultation with a health care professional.

> <u>What will you do with my information</u>? Librarians, as part of the

profession's code of ethics, have always expressed concern for the privacy and

confidentiality of personal information, circulation records, Internet usage, etc.

Yet, this guiding principle is generally not expressed in the library websites.

More importantly, when a library website requests personal information (as part

of an interlibrary loan, membership, or reference question) they should fully disclose how any personal information will be used by the library and indicate that all information is strictly confidential. The Greater Hazelton Medical Library includes the following privacy principle on their request forms:

> ***Your personal contact information:*** (this is kept private and
> is only used for purposes of contacting you regarding your inquiry.)

The Rapid City Regional Hospital Health Information Center request form tells users that "Your request for information will be kept confidential."

What range of information can I access on your site? Most sites offer a limited range of content. Of the fourteen types of health content, the average library offered only four – external website links, catalog access, database access, and e-mail reference. However, several websites offer good examples of some unique and useful content.

As an added service, five sites have "bookstores" allowing users a chance to purchase books through a major online bookseller. But online collections do not just access the printed word. Stanford's Health Library offers a collection of "online health videos" that users can watch with RealPlayer.

To assist patrons in finding information, Massachusetts General Hospital's ARCH site offers an extensive online tutorial. Besides reviewing the available library resources and electronic databases, the tutorial covers internet searching tips, search engines, how to use PubMed and MedlinePlus, and steps for evaluating health information. Users can opt to take a "final exam" to test their understanding.

Following through on Marylaine Block's advice to remind users of the library's physical collection, two sites provided stellar examples of pathfinders. Gerald Tuck Memorial's HealthInfo Center has an extensive interactive pathfinder database. Users select from a list of subjects and can retrieve any of the following types of resources:

- A disease description
- National Jewish Med Facts
- National Jewish Medical Scientific Update issues
- Health consumer books and journal articles
- Associations, newsletters, and web resources
- Scientific books and journals
- Professional journal citations linked to PubMed/MEDLINE for abstracts.
- Links to PubMed/MEDLINE to search for the latest articles.

The University of Michigan's Patient Education Resource Center has compiled an extensive collection of Information Guides. These Guides include a list of articles, pamphlets, books, videos, and web and listserv resources. Each resource is well-annotated.

Some unique content included (1) a list of questions that patients should ask their doctors, (2) tips for newly diagnosed patients on how to search for relevant health information, (3) a randomly generated "Medword" definition each time the home page is accessed, (4) links to online health assessment quizzes, and (5) power of attorney and health directive forms.

Finally, two truly unusual items were a prominently displayed link to the "Weather" on one consumer health library homepage and "Consumer Health Recipes" on another site.

How do I know your information is accurate? Spelling and grammar errors tarnish the professionalism and undermine the quality of the content, no matter how accurate or informative. Using word processing programs to aid in proofreading would reduce the inaccuracies and could easily be cut and pasted into the HTML sections.

How recent is this information? How often do you add new content? Several issues associated with web page "revision" dates abound. First, even if a revision date exists, users have no indication of how old the information is unless an original posting date is included. This date is typically associated with originally created health content, but can be useful for websites as well. Secondly, a "revision" date does not mean that the page has been thoroughly checked; simply that some element has been added or changed.

For example, one large academic health science library has a "revised 9 September 2002" date on a web page with a link still to the now defunct Internet Grateful Med. The Idaho State University IHSL Services for Consumers clarifies their updates by using "content updated by Marcia Francis, 7/25/02" and "links checked 07/11/02."

Another problem is that some sites will use as standard practice "site revised: [date]," providing no information about which page was actually "revised" and what was added or changed. Using symbols or a "What's New" section is a simple way to show users that the library's website is dynamic and encourages users to keep returning. NOAH's "What's New" section identifies not only what

items are completely new, but also what has been changed. In addition, a "New" or "Updated" symbol with a month date is placed next to the relevant resource.

One of the benefits that library websites can provide over general search engines is consistently accessible information. Enough dead links will make a web page useless. The high number of non-operational external links indicates that libraries may not be taking advantage of the link checking services. For example, a second library also still has a link to Internet Grateful Med. To their credit, their thorough annotation noted that IGM would be discontinued in September 2001. Yet, one year later, the link still exists on their website.

When I'm searching the Internet, how do I know I'm finding the "good stuff"? As was noted earlier, explaining how the library selects its own content provides an opportunity to educate users to adopt the quality criteria when searching the Web on their own. Since user instruction has become a seminal role for librarians, it is not clear why more libraries have not included this information in their websites.   While links to external sources are useful, creating one's own content makes this information more readily accessible to the library's user. Christiana Care's Community Health Library has a page devoted to "Searching the Internet" which addresses using search engines, evaluating health information, searching the medical literature, and who you can trust.

I am looking for a local [gerontologist, AIDS support group, hospice, …]? Eventually, the user will have to implement his/her knowledge locally. This information is often difficult to find because it exists in many disparate places. Collecting and organizing local information and resources becomes a strategic

means for libraries to stay relevant and provide critical information. Including

links to a handful of local organizations is a good start, but some libraries have

extended the concept.

Mississippi's Patient Education Center (PEC), using the state's health

statistics, has listed the top ten health conditions in the state. The top ten

conditions are then linked to Web and/or local resources. The PEC also uses an

"MS" to denote when a linked site is local. Arkansas' Health Link is one of the

few websites to offer a strong local health focus. Their "Arkansas Information by

Region" provides an interactive county map linking the user to health resources

for various conditions. For original content, Houston HealthWays developed a

useful and locally relevant content page on hurricane awareness. Besides

explaining the science behind hurricanes, the content also instructs users on

what to do in the event of a hurricane warning or watch, provides a survival kit

checklist and evacuation maps, lists shelters, and important phone numbers.

My English is not very good, do you have any information in [Spanish, …]?

Spanish was the most common foreign language offered by library sites.

Occasionally, library websites would simply note in their link descriptions if

Spanish material were available. A handful of other sites have either a Spanish

version or separate Spanish sections. Interestingly, none of these latter sites

translated their disclaimer or link annotations into Spanish. Some libraries have

different ethnic populations and are addressing the linguistic needs of those

communities. For example, the NYU Medical Center's Patient and Family

Resource Center has uniquely added its patient education materials not only in

English, but in Chinese as well. Probably the most polyglot is Utah's Eccles Health Sciences Library. They offer patient education information on vaccines, medical care, and select diseases and conditions in 24 languages!

Do you have any information that is easier to understand? Given that health literacy reading levels average the sixth grade level and most health information is written at a tenth grade level (Graber 1999), libraries could include links or provide information at reading levels more suitable for some users. Health InfoNet highlights this information with the heading "Easy to Read."

My eyesight is poor. Do you have information in large print? No library website provided original content in a large print format, either in HTML or in PDF. However, Health InfoNet and Health Link provide instructions to users on how to increase the font size displayed on the web page.

Two explanations may account for why libraries are not more content to meet the needs of special populations. First, library sites may not offer linguistic or literacy information because it is not perceived to be a user community need. Another reason is that the libraries may actually be providing the information, but have not elected to highlight the fact. A simple example is that many libraries includ a link to NOAH, a site with heavy Spanish content. Yet, most do not list NOAH under a foreign language heading nor do they provide annotations noting that Spanish information is available.

How easy can I find your site? Do I need any extra software to access information on your site? Libraries have done a good job making their consumer health sites visible from other access points. But libraries need to make their

content more accessible by indicating that additional software is required to view the content and providing a direct link to download the software. One academic health science library offers very informative patient education pamphlets on topics ranging from child tracheostomy to microscopic diskectomy. However, the site does not mention these files are in PDF format, nor is a link provided to download the free Acrobat Reader.

Where can I find information on your website on …? Organizing the health content by topic facilitates users locating the information they want. The more specificity, the more likely the user will identify the appropriate heading. But that level of granularity must be balanced with the number of links to be provided and overall desired size of the site.

The issue of navigation is especially important for those libraries that did not have a definable consumer health section, but incorporated the consumer health items within the relevant resource category (e.g., databases, web resources, journals, …). It would be useful in these circumstances for the library to denote those items that are consumer health-oriented. For example, one site has the Health Reference Center sandwiched in a long list of other professional databases. No annotations or symbols have been used to promote the appropriateness of this resource for health consumers. To address this concern, the Health Sciences Library at The University of Illinois Chicago at Peoria added a "CH" symbol adjacent to the resources intended for a general public audience.

Methodological Limitations

Although three sources were used to identify libraries offering consumer health information, this study is not comprehensive. Many more libraries with consumer health pages exist. Furthermore, the review focused only on United States libraries and excluded Canadian and other non-U.S. libraries. Given the prevalence in Europe of quality criteria research, it would be especially interesting to compare U.S. and European library sites.

The quality elements selected for the assessment tool and scoring chart were derived and tailored to fit the library context. Elements such as advertising and sponsorship were not included since they are not as relevant in this application compared to a general health website. Arguments could be made for adding or deleting some of the elements. For example, many other aspects of accessibility and navigability could have been included. However, site maps, download time, and additional software were chosen because those elements are more easily discernable measures. An attempt was made to conduct a reliability test of the assessment tool. A library student[2] tested eighteen sites using the tool. However, subsequent to that test (not as a result of that test), the tool was changed making any comparison of data invalid.

The study also did not collect specific information about the libraries themselves, such as number of staff responsible for the consumer health page, level of control over the web page design and hosting of site, age of the site, title and credentials of the site author, average time spent maintaining the site, and

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reason for creating the site. Any of these variables may have an impact on the quality of the library's consumer health website and could be a topic for further research.

Another limitation of this study was lack of consumer input. A focus group could have been instructed on the nine quality elements and then asked to rate how well a random group of library websites meets these elements. The group could also have provided insight as to which of those elements are important to them.

Future Research

Besides the previously mentioned opportunities for research, the study has also highlighted the need to find answers to the following questions.

Consumer Perspective. Why and when do people use libraries to locate health information? Why do people not think of using libraries? What can libraries do to entice users to their consumer health websites? Do users see library websites as providing better access and more quality information?

Consumer and Web Interface. In a comparison of a general search engine, health search engine, and a library web page, which would a consumer prefer and why? What design features would appeal and elicit more public usage of library sites?

Library Site-Oriented. Which health websites are most linked by libraries? What is the literacy level of these linked sites? How well does the library's virtual presence mirror the library's physical collection and services?

CONCLUSION

This study sought to describe how well libraries provide quality consumer health websites. The nine quality elements seem rather obvious – purpose, authority, disclosure, scope, accuracy, currency, relevancy, accessibility, and navigability. Some of these elements are based on traditional web design principles (e.g., checking links, simple design, headings that are significant to the user, …), while others are more specifically health-related and have been part of medical librarianship practice (e.g., confidentiality, evaluating resources, meeting needs of special groups, …). Yet the library consumer health websites studied do not fully reflect these quality elements.

Libraries currently find themselves in the challenging times of competing for their users' attention in a dynamic online environment. The recent URAC and VitalSeek partnership aims to provide for health seekers an interface to search across all URAC-accredited websites (VitalSeek 2002). As a result, consumers will be able to retrieve current, relevant, and authoritative health information with the ease of a simple search engine. Faced with this competition, library consumer health websites need to be doing better than the minimum in providing a quality online presence.

Towards that end, libraries can use the following checklist to aid in developing a quality consumer health website.

- Explain why a user should visit your site. Include, preferably on the main page, a mission or introductory statement of the site's purpose and intended audience.
- Identify the person responsible for creating the page's content and their credentials.

- Include contact information.
- Explain the process for selecting the health content.
- Annotate all linked health websites.
- Diversify content by mixing links, original content, and local resources.
- Proofread to ensure accurate grammar and spelling.
- Include an original posting date as well as a latest revision date on each content page.
- Use symbols or a "what's new" section to indicate what changes or additions have been made to the site.
- Use link checking software to ensure that internal and external links stay operational.
- Educate users on how to search for and evaluate quality health information.
- Depending upon your community, provide materials that meet special user needs, such as foreign language, easy to read, and large print.
- Focus on local health information as a way to make your site unique.
- Ensure the library's consumer health website is easily accessible from the host institution's main page.
- Use minimum graphics to facilitate quick downloading.
- Include a sitemap or search function if the site is large.
- For large numbers of links, use subject headings.

A quality website requires a commitment of time, staff, and resources. Admittedly, the stringent budget environment currently facing libraries makes it difficult to sustain the resources and effort needed to design and maintain a worthwhile website. However, if libraries want to continue to promote themselves as valuable health information intermediaries, the profession needs to better design their own consumer health websites.

APPENDIX A.   REASONS FOR EXCLUSION FROM FINAL LIST

Original Sources

CAPHIS	218
MedlinePlus	110
NN/LM	36
Total Sites	**364**

Listings Removed Due To

Duplication	92
No URL listed	58
URL error	13
No link found on host page	28
Non-US	11
Miscellaneous	2
Total Removed Sites	(204)

Sites Reviewed	**160**
Sites without CH content	42

Total Sites Analyzed	**118**

Duplicates	Same sites listed in more than one directory.
No URL listed	The directory did not include a URL for the institution, library, nor consumer health information service.
URL error	The URL was not found.
No link found	For sites with an institution or library URL, no readily discernible link to the consumer health section was found.
Non-U.S.	Library not located in the U.S.
Miscellaneous	Non-profit disease organization.
Sites without CH content	Although a consumer health URL was listed, the site does not contain consumer health content, but is simply a one-page description of the library's services.

APPENDIX B. REVIEWED LIBRARY SITES

HOST INSTITUTION and LIBRARY NAME	SITE URL
ALABAMA	
University of Alabama at Birmingham Health InfoNet of Jefferson County	http://www.healthinfonet.org
ARIZONA	
Arizona Health Sciences Library Consumer Health Information Links for Everyone	http://www.chilehealth.org/
Samaritan Health System The Learning Center	http://www.samaritan.edu/library/PatEd.htm
ARKANSAS	
Arkansas Children's Hospital Family Resource Library	http://www.ach.uams.edu/library - click on Family Resource Library
Arkansas Consumer Health Information Network HealthLink	http://www.arhealthlink.org/
Phillips Community College/UA Delta Health Education Center Library	http://www.uams.edu/ahec/consum2.htm
ALASKA	
University of Alaska, Anchorage Health Sciences Information Service	http://www.lib.uaa.alaska.edu/hsis/cons.htm
CALIFORNIA	
County of LA, UCLA Med Center Consumer Health Program and Services (CHIPs)	http://www.colapublib.org/services/chips.html
Grossmont Health Care Herrick Community Health Care Library	http://herricklibrary.org/
Kaiser Permanente Community Wellness Library	http://www.crewnoble.com/kpwellness/
Los Gatos Community Hospital Community Health Library of Los Gatos	http://www.healthlib.org/
Marshall Hospital Community Health Library	http://www.marshallhospital.org/library.cfm
Petaluma Health Care District Redwood Health Library	http://www.phcd.org/rdwdlib.html
St. Joseph Health System - Humboldt County Kris Kelly Health Information Center	http://www.humboldt1.com/~kkhic
The Health Trust Planetree Health Resource Center	http://planetreesanjose.org/
UCSF UCSF Cancer Resource Center	http://cc.ucsf.edu/crc/index.html

UCSF Stanford Health Care Stanford Health Library	http://healthlibrary.stanford.edu/
University of California, Davis Health Sciences Libraries	http://www.lib.ucdavis.edu/healthsci/conshealth.html
University of California, San Francisco Patient Education Resource Center	http://sfghdean.ucsf.edu/barnett/PERC/default.asp
ValleyCare Health Library Cancer Resource Center	http://www.valleycare.com/library.html
Washington Hospital Washington Community Health Resource Library	http://www.healthlibrary.org
COLORADO	
Community Hospital Consumer Health Library	http://www.colosys.net/~janetn/lib2.htm
Exempla Saint Joseph Hospital William V. Gervasini Memorial Library	http://www.exempla.org/yourhealth/libraries/
National Jewish Medical and Research Center HealthInfo Center	http://library.nationaljewish.org/resources/hic.html
Penrose-St. Francis Health Services Webb Memorial Library (Consumer Health Library)	http://www.penrosestfrancis.org/webb_library/defa ult.asp?sub=2&PID=1
CONNECTICUT	
Gaylord Hospital Tremaine Library & Resource Center	http://www.gaylord.org/pages/services/se_library.html
Hartford Hospital Health Science Libraries	http://www.harthosp.org/library/consumer.html
University of Connecticut Health Center Information Network Healthnet: Connecticut Consumer Health	http://library.uchc.edu/departm/hnet
Waterbury Hospital Health Center Library	http://www.waterburyhospital.com/library/consumer.s html
DELAWARE	
Christiana Care Health System Community Health Library at Eugene duPont	http://www.christianacare.org/health_guide/health_ guide_pmri_health_info.cfm
Delaware Academy of Medicine, Inc. Consumer Health Library	http://www.delamed.org/ (select Consumer Health Library Services)
GEORGIA	
Floyd Medical Center Community Health Resource Center	http://www.floydmed.org/chrc.html
Medical Center of Central Georgia Health Resource Center	http://www.mccg.org/hrc/hrchome.asp
HAWAII	
Hawaii Medical Library Consumer Health Information Service (CHIS)	http://hml.org/CHIS/

IDAHO	
Idaho State University Oboler Health Sciences Library- IHSL Services for Consumers	http://www.isu.edu/library/ihsl/conshlth.htm
Kootenai Medical Center DeArmond Consumer Health Library	http://www.nicon.org/DeArmond
ILLINOIS	
Alzheimer's Association Green-Field Library & Resource Center	http://www.alz.org/ResourceCenter/ResourceCenter.htm
Northwestern Memorial Hospital Health Learning Center	http://www.nmh.org/health_info/hlc.html
OSF Saint Francis Medical Center Center for Health Resource Library	http://library.osfsaintfrancis.org/chi.htm
University of Illinois - Chicago Library of the Health Sciences	http://www.uic.edu/depts/lib/lhs/resources/consumer/
University of Illinois at Chicago Library of the Health Sciences – Peoria	http://www.uic.edu/depts/lib/lhsp/resources/consumer.shtml
KENTUCKY	
University of Kentucky Health Information Library	http://www.mc.uky.edu/PatientEd/
LOUISIANA	
LSUHSC-S School of Medicine Library	http://www.healthelinks.org/
MAINE	
Central Maine Medical Center Gerrish-True Health Sciences Library	http://www.cmmc.org/library/links.html
Eastern Maine Medical Center Parrot Health Science Library	http://www.emh.org/hll/hpl/guide.htm#con
Ellsworth Public Library/Maine Coast Hospital Health Education Library Project	http://www.mcmhospital.org/fyi/reference/about_helper.html
Franklin Memorial Hospital FMH Medical Library	http://www.fchn.org/fmh/libresource.htm
Penobscot Bay Medical Center Niles Perkins Health Science Library	http://www.nehealth.org/library/library.asp
Stephens Memorial Hospital Health Information Library	http://www.wmhcc.com/Library/
MARYLAND	
Montgomery County Department of Public Libraries Health Information Center	http://www.mont.lib.md.us/healthinfo/hic.asp
MASSACHUSETTS	
Baystate Medical Center Baystate Consumer Health Library	http://www.baystatehealth.com/library

Beth Israel Deaconess Medical Center Health and Wellness Learning Center	http://www.bidmc.harvard.edu/learningcenter/index.asp
Boston University Medical Center Alumni Medical Library	http://med-libwww.bu.edu/library/consum.html
Lowell General Hospital Consumer Health Collection	http://www.lowellgeneral.org/library/weblibcons/NLM/Consumerclassif.html
Mass General, Mass Prevention Centers Access to Resources for Community Health	http://www.mgh.harvard.edu/library/arch/arch.asp
Massachusetts General Hospital Center Treadwell Library/Consumer Health Reference	http://www.mgh.harvard.edu/library/chrcindex.html
Massachusetts General Hospital Patient and Family Learning Center	http://www.mgh.harvard.edu/depts/pflc
Milford-Whitinsville Regional Hospital Milford Library Greater Milford Area Health Resource Center	http://www.infofind.com/library/chic.htm
St. Luke's Hospital St. Luke's Hospital Health Sciences Library	http://southcoast.org/library/
University of Massachusetts Medical Center HealthNet	http://healthnet.umassmed.edu/
MICHIGAN	
Botsford General Hospital Library & Internet Services	http://www.botsfordlibrary.org/consumer.htm
Henry Ford Health System Sladen Library & Center for Health Information Resources	http://www.sladen.hfhs.org/library/consumer/index.html
Marquette General Hospital Health Information Center	http://www.mgh.org/center.html
Oakwood Hospital Oakwood Hospital Medical Library	http://www.ohslibrary.org/links.htm#conhea
Providence Hospital and Medical Centers Providence Park Community Health Education Library	http://www.providence-hospital.org/library/
University of Michigan, Comprehensive Cancer Center Patient Education Resource Center (PERC)	http://www.cancer.med.umich.edu/learn/leares.htm
Wayne State University, Shiffman Library Community Health Information Services	http://www.lib.wayne.edu/shiffman/chis/chis.html
MISSISSIPPI	
University of Mississippi Medical Center-Rowland Medical Library Patient Education Center	http://www.library.umc.edu/pe-center/default.htm
MISSOURI	
Children's Mercy Hospital & Clinics Kreamer Family Resource Center	http://www.childrens-mercy.org/mso/dept/default.asp?dept=71
St. John's Regional Medical Center Mercy Health Resource Library	http://www.mercylibrary.org/

University of Missouri Columbia J. Otto Lottes Health Sciences Library	http://www.muhealth.org/~library/consumer/consumer.html
MONTANA	
St. Patrick Hospital and Health Sciences Center Center for Health Information	http://www.saintpatrick.org/chi/inetresources.php3?category=Consumer+Health+Sites
St. Peter's Hospital St. Peter's Medical Library	http://www.stpetes.org/resource/healthre.html
NEVADA	
Las Vegas Clark County Library District Health Science Library	http://www.lvccld.org/special_collections/medical/consumer_health.htm
University of Nevada, School of Medicine Savitt Medical Library	http://www.med.unr.edu/medlib/consum.html
NEW HAMPSHIRE	
Dartmouth College Consumer Health Library	http://www.dartmouth.edu/~biomed/resources.html
Littleton Regional Hospital Gale Medical Library	http://www.littletonhospital.org/Gale%20Medical%20Library/Index.htm
NEW JERSEY	
Atlantic Health System Health Sciences Libraries	http://www.infolink.org/ahslibraries/mwr.html#cons
Englewood Hospital and Medical Center Dr. Walter Phillips Health Sciences Library	http://www.englewoodhospital.com/ASP/patientlinks.asp
NEW YORK	
New York Online Access to Health (NOAH)	http://www.noah-health.org/
Long Island Jewish Medical Center Health Sciences Library	http://www.lij.edu/links/consumer_health_education.html
Mohawk Valley Network Center Medical Libraries & Information Resource	http://www.mvnhealth.com/libraries/resources.htm
New York University Medical Center Patient and Family Resource Center	http://library.med.nyu.edu/HCC/
The New York Public Library CHOICES In Health Information	http://www.nypl.org/branch/choices/
University of Rochester Medical Center Edward G. Miner Library	http://www.urmc.rochester.edu/Miner/Docs/Pated/index.html
Upstate Medical University, State University of New York Health Information Center	http://www.upstate.edu/library/consumers.shtml
ViaHealth Rochester General Hospital Wellness Information Center	http://www.viahealth.org/library/wellnessinfocenter

NORTH CAROLINA

New Hanover County Library — http://www.nhcgov.com/LIB/conshealth.asp
Wake Forest University, Baptist Medical Center — http://www.wfubmc.edu/library/medconsumers.htm
Consumer Health Information

OHIO

University of Cincinnati Medical Center — http://netwellness.org/
NetWellness Consumer Health Information

OREGON

Mid-Columbia Medical Center — http://www.mcmc.net/phrc.htm
Planetree Health Resource Center

Oregon Health & Science University — http://www.ohsu.edu/library/consumerhealth/index.shtml
Consumer Health Resources Center

PENNSYLVANIA

College of Physicians of Philadelphia — http://www.collphyphil.org/chic.html
C. Everett Koop Community Health Information Center

Geisinger Medical Center — http://www.geisinger.edu/education/commlib.shtml
Community Health Resource Library

Greater Hazleton Health Alliance — http://www.ghha.org/library.htm
Greater Hazleton Health Alliance, Women's Resource Center

Milton S. Hershey Medical Center — http://www.hmc.psu.edu/commhealth/
Lois High Berstler Community Health Library

Moses Taylor Hospital — http://www.mth.org/healthwellness.html
Moses Taylor HealthInfo Library

St. Francis Medical Center — http://www.sfhs.edu/library/sfmc3.htm
Health Sciences Library

Susquehanna Health System — http://www.shscares.org/services/lrc/index.asp
Learning Resources Center - Medical Library

University of Pittsburgh, Health Sciences Library System — http://www.hsls.pitt.edu/chi/index.html
Hopwood Library

SOUTH CAROLINA

Lexington Medical Center — http://www.lexmed.com/lib.htm
Community Health Information Library

SOUTH DAKOTA

McKennan Hospital — http://www.childmedlib.org
Children's Medical Library

Rapid City Regional Hospital — http://www.rcrh.org/education/LibraryResourcesConsumers.htm
Health Information Center

TENNESSEE

Preston Medical Library,Univ of Tennessee Medical Center — http://www.utmedicalcenter.org/library/chis.asp
Consumer & Patient Health Information Service

St. Jude Children's Research Hospital Family Information Library	http://www.stjude.org/library/family%20library%20web/default.htm

TEXAS	
Cook Children's Medical Center Matustik Family Resource Center	http://www.cookchildrens.org/CC/Cook/Matustik_Library.asp
Jesse H. Jones Community Health Information Service Houston Healthways	http://hhw.library.tmc.edu/

UTAH	
University of Utah Eccles Health Sciences Library	http://medlib.med.utah.edu/

VERMONT	
Dana Medical Library Vermont Consumer Health Information Project	http://library.uvm.edu/dana/vtchip/

VIRGINIA	
Danville Regional Health System Better Health Center Health Library	http://www.danvilleregional.org/medlib/bhclibrary.htm
Virginia Commonwealth University Community Health Education Center	http://www.vcuhealth.org/chec/

WASHINGTON	
Central Washington Hospital Heminger Health Library	http://www.cwhs.com/erc/HemingerHealthLibrary.asp
Highline Community Hospital Planetree Health Library	http://www.hchnet.org/pl_library.asp
Kittitas Valley Community Hospital KVCH Community Health Library	http://www.hometownhospital.com/kvch/link.cgi
Southwest Washington Medical Center Library Services	http://www.swmedctr.com/Home/Facilities/Library/
St. Joseph Hospital Medical Library	http://www.sjhbell.com/Cons.htm

WASHINGTON DC	
George Washington University Medical Center Himmelfarb Health Sciences Library	http://fact.gwumc.edu/library/iresources/subjtitl.cfm?s=Consumer%20Health

WISCONSIN	
Gundersen Lutheran Medical Center John & Nettie Mooney Health Resource Center	http://www.gundluth.org/healthinfo

Total Sites Reviewed:	118

Appendix C. Non-Reviewed Library Sites

ALABAMA	
American Sports Medicine Institute	
Richard M. Scrushy Library	no URL listed
Bon Secours Cottage Health Services	
Cottage Health Resource Center	no URL listed
Mobile Infirmary Medical Center	
Total Life Care Resource Center	no URL listed

ARIZONA	
Phoenix Children's Hospital	http://www.phxchildrens.com/about/services/emilyc enter/index.html
The Emily Center	library description only, no CH content
Scottsdale Healthcare	http://www.shc.org/healthresources/healthinfocente r.asp?locationId=9999
Health Information Center at Fashion Square Mall	library description only, no CH content
Scottsdale Healthcare's Virginia G. Piper Cancer Center	
Werner Support & Resource Center	no URL listed

CALIFORNIA	
Gutman Medical Library and Information Center	http://www.sedms.org
	URL transfers to Sierra Sacramento Valley Medical Society website
Alexian Brothers Hospital	
Ismael Medical Library	no URL listed
California Pacific Medical Center	http://www.cpmc.org
Planetree Health Library (can't locate on website)	CH section not found from institution's home page
Children's Hospital & Health Center	
Health Sciences Library	no URL listed
Children's Hospital Oakland	http://www.childrenshospitaloakland.org/fec.html
Family Education Center	CH section not found from institution's home page
Cottage Health System - Santa Barbara Cottage Hospital	http://glas.sbch.org/
Reeves Medical Library	
Education Programs Associates (EPA)	
Resource Center	no URL listed
Gould Medical Foundation	
Gateway Health Library	no URL listed
Internet Health Resources Company	http://www.ihr.com/balibrar.html
Bay Area Health Libraries	only lists links to health libraries open to the public
Kaiser Permanente Medical Center	
Health Sciences Library	no URL listed
Kaiser Permanente Medical Center	http://www.kp.org
Irving P. Ackerman, M.D. Health Sciences Library	CH section not found from institution's home page

Kaiser Permanente Medical Center Walnut Creek	
Health Sciences Library	no URL listed
Lucile Packard Children's Health Services	http://www.lpch.org/HealthLibrary/FamilyResource Center/index.html
Family Resource Center	not rated - library description only, no CH health content
Older Adult Resource Center	
Older Adult Resource Center	no URL listed
Sharp Healthcare	
Consumer Health Library	no URL listed
Spinal Cord Injury Network International	http://www.spinal.net
SCINI Information Center	URL not found
Sutter Health	http://go.sutterhealth.org/comm/resc-library/sac-resources.html
Sutter Resource Library	URL not found; CH section not found from institution's home page
VA San Diego Healthcare System	
Patient Health Library	no URL listed
Valley Children's Hospital	http://www.childrenscentralcal.org/while_at_Childre ns.asp?PageID=252&Fo
Family Resource Center	library description only, no CH content
CANADA	
BC Cancer Agency	
Library/Cancer Information Centre	not U.S.
Children's Hospital of Eastern Ontario	http://www.cheo.on.ca/english/2020.html
Kaitlin Atkinson Family Resource Library	not U.S.
Glenrose Rehabilitation Hospital	http://www.grhosp.ab.ca/glenrose/library.htm
Patient and Family Library	not U.S.
Hamilton Health Sciences Corporation	http://www.hhsc.ca/ccfc/frc.htm (not found)
Family Resource Centre	not U.S.
Humber River Regional Hospital	
Health Resource Centre	not U.S.
IWK Grace Health Centre for Children, Women and Families	
Family Resource Library	not U.S.
Montreal General	http://ww2.mcgill.ca/rvhlib/consumer2/chhome.htm
Patient Resource Centre	not U.S.
Ottawa Regional Cancer Centre	http://www.ncf.carleton.ca/cancer
Learn... To Live Program	not U.S.
Provincial IODE Genetics Resource Centre	http://www.lhsc.on.ca/programs/medgenet/support. htm
Provincial IODE Genetics Resource Centre	not U.S.
Toronto Public Library	http://www.tpl.toronto.on.ca/uni_chi_index.jsp
Consumer Health Information Service	not U.S.

Women's College Hospital

Regional Women's Health Center, Resource Centre	not U.S.

DELAWARE

Christiana Care Health Services

Health Information Resource Center	no URL listed

FLORIDA

Bay Pines VA Medical Center

Patient Education Resource Center	no URL listed

Halifax Medical Center

Josephine Field Davidson Cancer Resource Library	http://www.halifax.org CH link not found from institution's home page

James A. Haley Veterans' Hospital

Patients' Library	no URL listed

Winter Haven Hospital

Consumer Health Library	no URL listed

GEORGIA

Dekalb Regional Healthcare System

Consumer Health Library	http://www.drhs.org/wellnesscenter.asp library description only, no CH content

Medical College of Georgia

Family Resource Library	http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm library description only, no CH content

IDAHO

St. Luke's Regional Medical Center

St. Luke's Meridian Family Health Information Center	http://www.slrmc.org/ CH link not found from institution's home page

ILLINOIS

Central DuPage Hospital

Medical Library	no URL listed

Illini Hospital

Perlmutter Library	no URL listed

MacNeal Hospital

Health Answers Service/Health Sciences Resource Center	no URL listed

Passavant Area Hospital

Community Health Information Center (CHIC)	no URL listed

Trinity Medical Center

Community Health Resource Center	http://www.trinityqc.com/healthtouch.html library description only, no CH content

University of Illinois at Chicago

Library of the Health Sciences at Rockford	http://www.uic.edu/depts/lib/lhsr/services/consumerhealth.html URL not found

INDIANA

Riley Hospital for Children
Riley Family Resource Center

no URL listed

IOWA

Iowa Health Net

www.iowahealth.net/netradio/consumerhealthinfo.htm

Consumer Health Information

URL not found

Mercy Hospital
Medical Library

http://www.mercyic.org
CH link not found from institution's home page

University of Iowa Hospitals & Clinics

http://indy.radiology.uiowa.edu/welcome/UIHC/PatientLibrary/PatientLibrary.html

Patient's Library

URL not found

KENTUCKY

Central Baptist Hospital

http://www.centralbap.com/education/community/library.htm

Medical Library

library description only, no CH content

Health Dimensions at Fayette Mall
Health Dimensions at Fayette Mall

http://www.healthdimensions.org
URL not found

Lourdes
Health Science Library

http://www.lourdes-pad.org
CH section not found from institution's home page

Veterans Affairs Medical Center - Lexington, KY
Patient Education Resource Center

no URL listed

Western Baptist Hospital

Library

no URL listed

LOUISIANA

Baton Rouge General Medical Center - Bluebonnet
Family Health Information Center

no URL listed

Mary Bird Perkins Cancer Center
Community Library

no URL listed

VA Medical Center
Medical Library

no URL listed

MAINE

Maine Medical Center
Maine Medical Center Library

http://www.mmc.org/library/
library description only, no CH content

Parkview Hospital

http://www.parkviewhospital.org/communit.htm#Library

Library

library description only, no CH content

Southern Maine Medical Center

http://www.smmc.org/services/service.php3?choice=10

Health Sciences Library

library description only, no CH content

MARYLAND

Epilepsy Foundation of America
Epilepsy and Seizure Disorders Information
Service (ESDIS)

http://www.efa.org/services/library.html
library description only, no CH content

Springfield Hospital Center

The Library

no URL listed

MASSACHUSETTS

Brockton Hosptal

Brockton Hospital Medical Library

no URL listed

Jordan Hospital

Daryl A. Lima Memorial Library

no URL listed

Memorial Health Care

Community Health Library

no URL listed

New England Baptist Hospital
Paul E. Woodard Health Sciences Library

http://www.nebh.org/health_lib.asp
library description only, no CH health content

University of Massachusetts Medical School

Pediatric Family Resource Library

http://www.umassmemorial.org/ummhc/hospitals/med_center/services/CM
library description only, no CH content

MICHIGAN

Bay Medical Center
Library

no URL listed

Borgess Medical Center
CHI Library

http://www.mlc.lib.mi.us/~aeblic
URL not found

Bronson Methodist Hospital

Bronson HealthAnswers

http://www.bronsonhealth.com/content.asp?menu=K1
CH section not found from institution's home page

Cook Institute at Spectrum Health - Downtown

Consumer Health Library

http://www.spectrum-health.org/Pro/Libraries.asp?ID=7034E13E715C45DB
library description only; no CH content

Holland Community Hospital
Health InfoSource

http://www.hoho.org/infosrc/
library description only, no CH content

John D. Dingell VA Medical Center

Patient Learning Center

no URL listed

Munson Healthcare

Community Health Library

http://www.munsonhealthcare.org/munson/health_info/community_library.ph
library description only; no CH content

Northern Michigan Regional Health System
Dean C. Burns Health Sciences Library

http://www.northernhealth.org
CH section not found from institution's home page

Rehabilitation Institute of Michigan
Patient Education Library

http://www.RIMrehab.org
CH section not found from institution's home page

Spectrum Health

Spectrum Health Consumer Health Library

http://www.spectrum-health.org/educ/library/library.htm
URL not found

St. Joseph Mercy Hospital
Health Information Library

http://www.sjmh.com
CH section not found from institution's home page

William Beaumont Hospital

Consumer Health Information Center   no URL listed

MINNESOTA

Mayo Foundation for Medical Education and Research   http://www.mayoclinic.org/patienteducation/

Mayo Patient Education Center   library description only; no CH content

North County Health Services   http://www.nchs.com/ped.html
Patient Education Department   library description only; no CH content

North Memorial Health Care   http://www.northmemorial.com/about/patientResources.asp#library
Medical Library   library description only; no CH content

MISSISSIPPI

St. Dominic-Jackson Memorial Hospital   http://www.stdom.com/about/care/chrc.cfm
Consumer Health Resource Center   library description only; no CH content

MISSOURI

American Academy of Family Physicians

Health Education Program   no URL listed

Kansas City, MO Veterans Affairs Medical Center

Learning Center   no URL listed

Liberty Hospital

Health Resource Center   no URL listed

SSM St. Mary's Health Center   http://www.stmarys-stlouis.com/internet/home/stmaryhc.nsf/

Nancy Sue Claypool Library   not rated - library description only, no CH health content

St. John's Health System

Van K. Smith Community Health Library   no URL listed

MONTANA

Kalispell Regional Medical Center   http://www.krmc.org
Medical Library   CH section not found from institution's home page

Saint Vincent Hospital and Health Center   http://stvincenthealthcare.org/home-svh.aspx
Consumer Information Collection   CH section not found from institution's home page

NEW JERSEY

Englewood Hospital and Medical Center   http://www.melandfoundation.org
Meland Foundation Network for Medical and Health Information   library description only, no CH content

Rahway Hospital   http://www.rahwayhospital.com/library.htm
Consumer Health Library   library description only, no CH content

NEW MEXICO

St. Vincent Hospital
Medical Library   no URL listed

NEW YORK

American Red Cross NY-Penn. Region

Blood Services   no URL listed

Brookhaven Memorial Hospital M. C.

Medical Library   no URL listed

Faxton-St. Luke's Healthcare

Consumer Library   no URL listed

New York Academy of Medicine Library   http://www.nyam.org/library/

                                                    no distinct CH section on website

NORTH CAROLINA

Cape Fear Valley Health System   http://www.capefearvalley.com/consumer_health_library.htm

Consumer Health Library   library description only; no CH content

Moses Cone Health System

Library   no URL listed

Presbyterian Hospital Matthews   http://www.presbyterian.org
Health Care Information Center   CH section not found from institution's home page

OHIO

Akron General Medical Center   http://www.akrongeneral.org/comlib.htm
Consumer Health Library   library description only, no CH content

Akron General Medical Center   http://www.agmc.org/hwlibrary.htm
Health and Wellness Consumer Health Library   library description only, no CH content

Barbeton Citizens Hospital   http://www.barbhosp.com/Community%20Library/Community%20Health%2

Community Health Library   URL not found

Children's Hospital   http://www.childrenscolumbus.org/edu/library.cfm
Janet Orttung-Morrow MD Family Health   CH section not found from institution's home page
Information Center

Children's Hospital Medical Center   http://www.akronchildrens.org/depts-services/resource.html
Family Resource Center   library description only, no CH content

CMH Regional System   http://CMHregional.com
Health Library   CH link not found from institution's home page

Cuyahoga County Public Library   http://www.cuyahogalibrary.org/onlineresources/databases/health.htm

Parma Regional Library   no CH section identified

Fairview Hospital of the Cleveland Clinic Health System
Lynn Marcell Community Resource Center   no URL listed

Miami Valley Hospital   http://www.libraries.wright.edu/libnet/subj/con/
Craig Memorial Library   CH section not found from institution's home page

Riverside Methodist Hospital   http://www.ohiohealth.com
Health Education Library   CH section not found from institution's home page

University Hospitals of Cleveland/Rainbow Babies & Children's Hospital   http://www.uhhs.com
W.O. Frohring Family Resource Center   CH section not found from institution's home page

OKLAHOMA

| **Saint Francis Health System** | http://www.sfh-tulsa.com/services/healthinfo.asp |
| Health Information Center | library description only, no CH content |

OREGON

Good Samaritan Hospital	http://goodsam.com
Professional Library Services	CH section not found from institution's home page
Good Samaritan Hospital	
Library	no URL listed
McKenzie-Willamette Hospital	http://www.mckweb.com/comlib.html
Community Health Library	library description only, no CH content
Rogue Valley Medical Center	
Bartels Community Health Library	no URL listed
VA Medical Center	http://www.teleport.com/~brayson
Health Information Center	URL not found

PENNSYLVANIA

Abington Memorial Hospital	
Library	no URL listed
Chambersburg Hospital	http://www.summithealth.org
Education Resource Center	CH section not found from institution's home page
Crozer-Keystone Health System	www.crozer.org
Library - Consumer Health Patient Education	CH section not found from institution's home page
Delaware Valley Medical Center	
Health Sciences Library/Learning Resources Center	no URL listed
Hazleton General Hospital	
Medical Library	no URL listed
Holy Spirit Hospital	
Library	no URL listed
Paoli Memorial Hospital	
Robert M. White Memorial Library	no URL listed
Pittsburgh VA Health Care System	
Library	no URL listed
UPHS/Presbyterian Medical Center	http://www.libertynet.org/~presby
Health Sciences Library	URL not found
UPMC Passavant	http://www.upmc.edu/passavant/library.htm
Medical Library	library description only, no CH content
Wills Eye Hospital	http://www.littlerockfoundation.org
Little Rock Foundation Patient Resource Center	CH section not found from institution's home page
Wyoming Valley Health Care System	
Health Resource Center	no URL listed

RHODE ISLAND

| **Kent County Memorial Hospital** | |
| Library | no URL listed |

SOUTH CAROLINA

Self Memorial Hospital
Community Health Information Center

http://www.selfmemorial.org/services/services.asp
library description only, no CH content

TENNESSEE

Saint Thomas Health Services

Patient and Consumer Health Center

http://www.saintthomas.org/healthinfo/healthanswers/peachi/
library description only, no CH content

TEXAS

Texas Health Resources
Planetree Health Resource Center

http://www.texashealth.org/hrc (not found)
CH section not found from institution's home page

Texas Scottish Rite Hospital for Children
Christi Carter Urschel Family Resource Center

http://www.tsrhc.org/hospital/
library description only, no CH content

UTAH

Huntsman Cancer Institute
Huntsman Cancer Learning Center

http://www.hci.utah.edu/6.html
library description only, no CH content

VIRGINIA

Inova Fairfax Hospital
Consumer Health Resources Center

http://www.inova.com/ifh/healthinfo.htm
library description only, no CH content

Rockingham Memorial Hospital
Virginia Funkhouser Health Sciences Library.
Patient/Family Section

http://www.rmhonline.com
library description only, no CH content

University of Virginia Medical Center
Body Talk Health Information Center

http://www.med.Virginia.EDU/medcntr/bodytalk/
not rated - library description only, no CH health content

Winchester Medical Center

Health Resource Center

no URL listed

WASHINGTON

Providence Seattle Medical Center
Consumer Health Information Library

http://www.providence.org/pugetsound/library/
URL not found

Providence Yakima Medical Center

Providence Health Information Center

http://www.providence.org/CentralWA/Health_Information/library.htm
library description only, no CH content

WASHINGTON DC

Children's National Medical Center

Family Library

no URL listed

WISCONSIN

Children's Health System
Special Needs Family Center

http://www.chw.org
CH section not found from institution's home page

Columbia Hospital
Medical Library

http://www.columbia-stmarys.org/body.cfm?id=16
CH section not found from institution's home page

Mercy Medical Center - Affinity Health System	http://www.affinityhealth.org
The Clark Family Health Science Library	CH section not found from institution's home page
Meriter Hospital	
Health Resource Library	no URL listed
St. Elizabeth Hospital -Affinity Health System	http://www.ministryhealth.org
St. Elizabeth Hospital Health Science Library	CH section not found from institution's home page
St. Vincent Hospital	http://www.stvincenthospital.org/wellness/asklib.shtml#
Consumer Health Information Section of Health Science Library	Library mentioned, but no web site
Zablocki Veteran's Affairs Medical Center	
Patient Education Resource Library	no URL listed

Total Sites Not Reviewed:	**154**

APPENDIX D. QUALITY CRITERIA ASSESSMENT TOOL

Date: |___|___|___| 2002 |

A. Site Profile Characteristics

A1. Website ID: |__|__|__|

A2. State: |__|__|

A3. Institution Name: _____

A4. CHIS or Library Name: _____

A5. Consumer Health (CH) site URL: _____

A6. Hosting institute/dept. URL: _____

A7. The CH content is being provided by a
1. Public library (local, county, …)
2. Academic health sciences library
3. Hospital library
4. Consortium
5. Hospital
6. Other: _____

A8. The online CH content being provided is …?
1. a virtual-only health information service. No physical consumer health collection/library exists.
2. an identifiable CH section (webpage or subsite) of a library website.
3. a website for a consumer health library/information center.
4. not part of a definable CH section, it is integrated with the library's website sections (e.g., databases, internet resources, …)

A9. How many TOTAL navigational pages are in the CH section or website?
1. Only one
2. 2 – 5 pages
3. 6-10 pages
4. 11-15 pages
5. More than 25 pages

A10. How many of the CHI navigational pages are devoted to CH content?
1. Only one
2. 2 – 5 pages
3. 6-10 pages
4. 11-15 pages
5. More than 25 pages

CONTEXT
B. Purpose

B1. **Is there a statement or introduction that explains the mission or purpose of the CH section or website?**
1. No
2. Yes, found under "Mission" or "About Us" link
3. Yes, found as a paragraph on the main CH page
4. Both 2 and 3

C. Authority

C1. **Do the CH pages indicate the name of the person/group responsible for the content?**
1. No
2. Yes
3. Yes, credentials/position also mentioned

C2. **Is contact information (email or phone) included for users wanting further information or having problems with the site?**
1. No
2. Yes

C3. **Does the CH site indicate that the included CH content (links, bibliographies, …) has been specially selected?**
1. No
2. Yes, but the site does not list the selection criteria
3. Yes, the site adequately explains the selection criteria and process

C4. **Which of the following types of organizations are being linked**?

	No	Yes
a. Government	1	2
b. Education/research institutions	1	2
c. Disease-oriented non-profit associations (ADA…)	1	2
d. Medical societies (AMA,…)	1	2
e. Non-profit online medical networks (MedWeb,..)	1	2
f. Libraries	1	2
g. Companies	1	2
h. Other specify: _____	1	2

C5a. **Do any of the linked health web resources adhere to HON, et al. criteria?**
1. None
2. Yes, a few
3. Yes, most all
4. Yes, all of them

C5b. **If yes, are those sites highlighted by a symbol or annotation?**
0. Not applicable.
1. No
2. Yes

C6. How many of the linked sites are annotated?
1. None
2. Some (<50%)
3. Most (>50%)
4. All

C7. Overall, do the annotations _adequately_ describe the purpose or benefit of the health site being linked?
0. Not applicable, no annotations provided
1. Somewhat, but could be improved
2. Yes, very adequate

D. Disclosure

D1a. Is a _disclaimer_ provided stating that the CH information is not intended to replace the advice of a personal physician or other medical professional?
1. No
2. No, but the information is available on a non-CH content page
3. Yes, but only mentioned on one or a few CH content pages
4. Yes, located on every CH content page

D1b. Is the disclaimer being provided as a
0. Not applicable.
1. link to a disclaimer page
2. text paragraph within the page
3. both

D2. Does the site include a _privacy/confidentiality_ statement of how the user's personal information will be used and/or disseminated?
0. Not applicable
1. No
2. Yes

CONTENT

E. Scope

E1. What form of consumer health content is provided?

		No	Yes
a.	Links to health websites	1	2
b.	Audio/visual material	1	2
c.	E-books	1	2
d.	Full-text material (pamphlets,…)	1	2
e.	Catalog access	1	2
f.	Database access (Gale, EBSCO)	1	2
g.	ILL/document delivery form	1	2
h.	Information packet service request	1	2
i.	Email or virtual reference	1	2
j.	Tutorials	1	2
k.	Pathfinders/bibliographies	1	2

l. Ask an expert	1	2
m. Referral/resource directory	1	2
n. Calendar of events/workshops	1	2
o. Other specify: _____	1	2

E2. How many links are provided to external health websites?
1. None
2. 1-10
3. 11-30
4. 31-50
5. Over 50

F. Accuracv

F1. Does the CH section contain any grammar or spelling errors?
1. Yes
2. No

G. Currencv

G1. Is an _original posting_ date shown on the CH content pages?
1. No
2. Yes, but only on one or a few pages
3. Yes, on each CH content page

G2. Is the _latest revision_ date shown on the CH content pages?
1. No
2. Yes, but only on one or a few pages
3. Yes, on each CH content page

G2b. Does the site indicate what information has been added or changed?
0. Not applicable
1. No
2. Yes, by using a symbol or annotation
3. Yes, by listing it in a "What's New" section
4. Both 2 and 3

G3. The most _outdated_ page on the CH site is?
0. Not applicable, update not indicated
1. More than 1 year ago
2. Between 6-12 months ago
3. Between 3-6 months ago
4. Between 1-3 months ago
5. Less than one month ago

G4. The most _recently updated_ page on the CH site is?
0. Not applicable, update not indicated
1. More than 1 year ago
2. Between 6-12 months ago
3. Between 3-6 months ago
4. Between 1-3 months ago
5. Less than one month ago

G5. Do the website's _internal_ links work?
1. No, one or more non-working links were found
2. Yes, all internal links work

G6. Do the website's _external_ links work?
1. No, one or more non-working links were found
2. Yes, all external links work

H. Relevancy

H1. Does the CH section provide information for the health seeker on how to evaluate health websites?
1. No
2. Yes, the site has written its own content on how to evaluate health websites
3. Yes, the site links to external criteria (e.g., HON, Health Summit, AMA…)
4. Both, own content and links

H2. Are materials or external links directly provided for _easy-to-read_ CH information?
1. Not apparent that this type of content is offered through the site.
2. Descriptions/annotations indicate that this type of content is available from a linked resource.
3. A heading organizes this type of content into one single access point for users.

H3. Are materials or external links directly provided for _foreign language_ CH information?
1. Not apparent that this type of content is offered through the site.
2. Descriptions/annotations indicate that this type of content is available from a linked resource.
3. A heading organizes this type of content into one single access point for users.

H4. Are materials or external links directly provided for _large print_ CH information?
1. Not apparent that this type of content is offered through the site.
2. Descriptions/annotations indicate that this type of content is available from a linked resource.
3. A heading organizes this type of content into one single access point for users.

H5. Are materials or external links directly provided for _local health_ information?
1. Not apparent that this type of content is offered through the site.
2. Descriptions/annotations indicate that this type of content is available from a linked resource.
3. A heading organizes this type of content into one single access point for users.

FORMAT

I. Accessibility

I1. Is the CH section directly accessible from the host institution's home page?
0. Not applicable
1. No link is evident from the host's home page

2. Yes, but it's not well labeled or requires navigating through several links
3. Yes, a well-labeled link exists on the host's home page

I2. If the site requires extra software (e.g., Acrobat), is a link easily provided to download it?
0. Not applicable
1. No
2. Yes

I3. Does the site use minimum graphics for quick download?
1. No
2. No, but offers a text-only version
3. Yes

J. Navigability

J1. By what method are the external links organized?
1. Random list
2. Alphabetical
3. Organization type (e.g., associations, government, support groups, …)
4. Subject heading (e.g., diseases, clinical trials, dictionaries, …)
5. Mixed format

J2. Which of the following subject categories are used to organize external links to CH information?

		N/A	No	Yes
a.	Reference (dictionary, …)	0	1	2
b.	General health	0	1	2
c.	Specific disease	0	1	2
d.	Special health (children, women,)	0	1	2
e.	Drugs/medications	0	1	2
f.	Medical tests/procedures	0	1	2
g.	Clinical trials	0	1	2
h.	Physician referral/Find a Dr.	0	1	2
i.	Health insurance/system	0	1	2
j.	Local resources/health info.	0	1	2
k.	Support groups/listservs	0	1	2
l.	Organization type (assoc., govt.)	0	1	2
m.	Foreign language materials	0	1	2
n.	Easy to read (i.e., low-literacy)	0	1	2
o.	other	0	1	2
	specify: _____			

J3. Does the CH section and/or host site provide a sitemap and/or search feature?
1. No
2. Yes

Comments:

_____

_____

APPENDIX E. A SCORE CHART OF MINIMUM QUALITY CRITERIA

CONTEXT		
Purpose		
CH section/site includes an introduction or mission statement	0	1
Name of person/group for CH content is indicated	0	1
Contact information is included on the CH content pages	0	1
The criteria for selecting the CH content is explained	0	1
All linked health sites are well-annotated	0	1
Disclosure		
A disclaimer exists on each CH content page	0	1
A privacy/confidentiality statement is provided	0	1
SUBTOTAL		**7**

CONTENT		
Scope		
At least one type of access to full-text content is provided (e.g., website links, database articles, e-journals, etc.)	0	1
At least one type of access to the CH collection in the library (pathfinder, catalog, bibliography, etc.)	0	1
At least one type of access to external CH resources (calendar of events, directory, ask an expert, etc.)	0	1
The CH section does not contain any spelling or grammar errors	0	1
Currency		
The latest revision date is shown on *each* CH content page	0	1
The most recently updated CH content page is <1 month	0	1
The most outdated CH content page is <1 month	0	1
The site indicates what information has been added or changed	0	1
The sites internal *and* external links function	0	1
Relevancy		
Information on how to evaluate health websites is provided	0	1
Easy-to-read materials/links are provided	0	1
Foreign language materials/links are provided	0	1
Large print materials/links are provided	0	1
Local health materials/links are provided	0	1
SUBTOTAL		**14**

STRUCTURE		
Accessibility		
The CH section is easily located from the host institution's site	0	1
Site uses minimum graphics for quick download	0	1
Navigability		
Links are organized by organization type and/or subject heading	0	1
A sitemap and/or search feature is provided	0	1
SUBTOTAL		**4**

Total Score		**25**

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