



AMERICAN INSTITUTES FOR RESEARCH

Go Local Expert Review Report – 03-119 NLM

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Introduction

Background and Methodology

In October 2003, American Institutes for Research (AIR) conducted an expert review of the NC Health Info (www.nchealthinfo.org) and Missouri Community Connection (www.communityconnection.org/index.jsp) web sites. These web sites serve as a portal to local health resources in their community. In an expert review, usability professionals examine an interface to determine how well it adheres to good user interface design principles (i.e., heuristics). The basis for conducting expert reviews is that people trained in usability evaluation are known to find more problems more quickly than others, particularly than the developers of the product being tested (Nielsen, 1993; Nielsen & Molich, 1990).

The goal of the expert review was to identify the positive aspects of each site as well as major usability issues. An additional objective was to recommend which areas of each web site should be incorporated into the design of a new prototype web site. The prototype will serve as a template for future sites that will be hosted by other states in the U.S. The National Library of Medicine's MedlinePlus.gov will contain a "Go Local" feature that will allow users to link to these state-level sites.



NC Health Info homepage



Missouri Community Connection homepage

Four AIR usability specialists reviewed each web site's user interface using a heuristics-based design evaluation. Each reviewer spent a day performing predetermined, core tasks and independently evaluating the web site based on their experience and established heuristics. The tasks were designed to ensure that reviewers explored many of the site's sections. Two of the experts performed additional tasks provided by the National Library of Medicine. All tasks are listed below:

NC Health Info Tasks

- You want to help a family member stop smoking cigarettes. Find out what kinds of smoking addiction services are offered statewide.
- Find out about epilepsy resources in the Greenville area.

- After researching epilepsy resources in the Greenville area, you are unhappy with the results. Please find more resources by increasing your search.
- Use the web site to help you locate an oncologist in Rowan County.
- Please locate a textbook definition of dieffenbachia.
- Find out where to go get contact information for organizations that do not have their own web sites.
- You are interested in reading up on recent research about bone cancer. Please locate appropriate articles on this topic.
- You know of a web site that is not currently listed on the NC Health Info site, but would be useful to include. Send the Webmaster your recommendation.
- You're looking for a list of support groups for breastfeeding mothers.*
- You need information on services for kidney patients.*
- You need information on dialysis centers.*
- You need some information on assisted living in Charlotte.*

Missouri Community Connection Tasks

- Locate long-term nursing care facilities in Lewis County.
- You want to help a family member stop smoking cigarettes. Find out what kinds of smoking addiction services are offered statewide.
- Locate all clinics in central Missouri.
- Please locate all not-for-profit cancer organizations within 10 miles of your house. You live at: 10 Main Street, St. Louis, Missouri 63108.
- Locate the contact information for the Missouri Department of Social Services.
- You are moving to Harrison County, Missouri, but you do not know what region this is considered. Use the map to help you locate YMCAs in your region.
- You know of a web site that is not currently listed on the Missouri Community Connection site, but would be useful to include. Send the webmaster your recommendation.
- You want to find out about support groups for breastfeeding mothers.*
- You want to find dialysis centers in central Missouri.*

Each reviewer worked independently to identify positive features and opportunities for the design refinement of each site. We then compared and consolidated findings from each of the reviewers and offered recommendations to consider when designing the new site. The following section presents an overview of our findings followed by a set of more detailed findings and recommendations.

*Provided by NLM

Findings and Recommendations

Overview

If the National Library of Medicine decides to choose one of the two web sites to act as a model for the new prototype, all four experts agree that the NC Health Info web site should serve as that model (rather than the Missouri Community Connection site). Although we identified usability problems with both web sites, we feel that the NC Health Info site provides a more intuitive user interface than the Missouri Community Connection site. The NC Health Info site has an advantage over the Missouri web site in all major aspects of web design, especially visual style, information architecture and navigation scheme.

The NC Health Info site projects a more appropriate visual style than the Missouri Community Connection site. The NC Health Info site contains a suitable balance of text and graphics, and the graphics selected nicely complement the purpose of the site. The consistent use of color on this site helps reduce the possibility for visual confusion. In contrast, the Missouri Community Connection site does not use color in a way that enhances the site's options. The graphics included on the site are more indicative of a site designed for younger audiences, which not only detracts from its professionalism, but creates discord between the purpose of the site and its projected image.

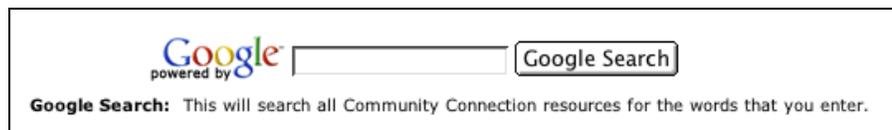
The organization of information on the NC Health Info site is more intuitive than on the Missouri site. On the latter web site, it is difficult to identify where to start conducting tasks and what the options are. This is probably due to the lack of information hierarchy on the homepage. In contrast, the NC Health Info site presents a clear hierarchy of options on the homepage, making it easy to identify how to begin.

Overall, navigating the NC Health Info site proved much less challenging than navigating the Missouri Community Connection site. Although the Missouri site provides users with more options when conducting a search, the site utilizes a variety of navigation controls for manipulating these options, and the controls are poorly laid out, which makes it difficult to determine how they relate to one another. Additionally, the Missouri site does not present the user with their search results immediately, but instead, forces the user to select from a series of sub-topics. Users may not be able to accurately predict which sub-topic contains the preferred result, and this can quickly lead the user down the wrong path. The NC Health Info site, on the other hand, utilizes a more straightforward approach to performing tasks. On this site, navigation is intuitive and controls are placed in a consistent location. Also, users are informed of each step in the process of conducting a search. We were pleased that the steps to complete tasks on this site seemed to follow a logical order.

Below, we present a more detailed list of findings and recommendations based on the evaluation of both web sites. Each recommendation is presented in bold and is followed by a descriptive explanation.

Detailed Findings and Recommendations

1. **Limit the homepage length to one screen of information if possible, but ensure that all major options are included on this page.** Both web sites effectively avoided requiring users to scroll on the homepage. However, we found that the Missouri Community Connection site did not include all major options on the homepage. For instance, the option to use Google search was buried on a secondary level page. Research suggests that information that is not placed above the fold on the homepage will most likely be overlooked, rendering the site less effective.



2. **Provide a link to MedlinePlus.gov for additional health information.** Currently, the NC Health Info site provides such a link, but also gives the user access to some MedlinePlus secondary links on its homepage. The area designated to MedlinePlus is equal to the area dedicated to main purpose of the web site (i.e., finding health services web sites). Dedicating so much screen real estate to MedlinePlus topics may cause confusion about the purpose of the site. We recommend providing just one link to MedlinePlus' homepage, in conjunction with a short description of the site's features to inform users who do not arrive at the Go Local site via MedlinePlus.gov. This will also free up screen real estate for other important options such as "Ask a Librarian" and "Suggest a site."



3. **Allow users to search for web resources by key word or by drilling down through topics.** Each of the sites contained useful functions for conducting a web resource search. Combining these functions and including them in the new site would provide users with more flexibility in approaching a search.

Search by Key Word

(Please select one.)

Subjects

Resource Names

Find Health Services Web Sites

Go to web sites in your community. Please Browse by:

Health Care Providers
for example: Allergists, Chiropractors, Dentists, Midwives, Psychologists, *more...*

Programs & Facilities
for example: Birth Centers, Hospitals, Support Groups, Yoga, *more...*

Services for Diseases & Health Issues
for example: Alzheimer's Disease, Breast Cancer, Diabetes, Fibromyalgia, *more...*

All Topics

4. **Ensure that category headings are descriptive and enable the user to predict what kind of information they will find by clicking on them.** Although the category headings on the NC Health Info homepage are not in and of themselves overly descriptive, the examples provided under each heading (such as “Birth Centers” under “Programs & Facilities”) were extremely helpful in identifying the type of information contained within each section. The Missouri Community Connection site also includes ambiguous category headings, such as “Organizational/Community/International” which may lead users down the wrong path.

Find Health Services Web Sites

Go to web sites in your community. Please Browse by:

Health Care Providers
for example: Allergists, Chiropractors, Dentists, Midwives, Psychologists, *more...*

Programs & Facilities
for example: Birth Centers, Hospitals, Support Groups, Yoga, *more...*

Services for Diseases & Health Issues
for example: Alzheimer's Disease, Breast Cancer, Diabetes, Fibromyalgia, *more...*

All Topics

Search by Topic (Please select one.)

Basic Needs

Business

Consumer Services

Criminal Justice/Legal

Education

Environmental Quality

Health Care

Income Security

Individual and Family Life

Mental Health Care and Counseling

Organizational/Community/International

Target Populations

5. **Allow users to select locations through text links, by zip code, and spatially (i.e., such as an interactive map).** Including all of these functions in the new site would provide users with flexibility and enable them to further limit their search. Each of the sites contains useful functions for designating location. The NC Health Info site provides text links and an interactive map, while the Missouri Community Connection site allows users to search by zip code. It should be noted that although the Missouri site contains a map, this map is marginally useful. Users will undoubtedly assume the map is clickable, yet it only serves as a reference. Including an interactive map in the new design is much more preferable.

- Counties**
- [Alamance County](#)
 - [Alexander County](#)
 - [Alleghany County](#)
 - [Anson County](#)
 - [Ashe County](#)
 - [Avery County](#)
 - [Beaufort County](#)
 - [Bertie County](#)
 - [Bladen County](#)
 - [Brunswick County](#)
 - [Buncombe County](#)
 - [Burke County](#)
 - [Cabarrus County](#)
 - [Caldwell County](#)
 - [Camden County](#)

0 miles of (ZIP Code)



6. **Allow users to search for multiple cities, counties or regions simultaneously.** Although the NC Health Info site allows users to expand a search for neighboring counties, this function is only available once the user has conducted a primary search. It may be more useful to provide this capability at the top-level, so users can locate information more efficiently.

7. **Allow users to execute a search by using the “Enter” key on their keyboard.** The Missouri Community Connection web site does not enable users to execute a search by pressing “Enter.” Instead, this action reloads the homepage. Since industry standard dictates that users will be accustomed to using the “Enter” key to perform a search, we recommend designing the new site accordingly.

8. **When displaying search results, provide users with the total number of results returned.** The NC Health Info site did not provide users with this information, and although the Missouri site did, the link was not easily recognized. We recommend including the total number of results at the top of the screen to enable users to compare the information they receive when using different modes of searching.

View 293 Resources Found	
<p>10 Subtopics for: HEALTH CARE</p> <ul style="list-style-type: none"> • EMERGENCY MEDICAL CARE • HEALTH SCREENING/DIAGNOSTIC SERVICES • HEALTH SUPPORTIVE SERVICES • HUMAN REPRODUCTION • INPATIENT HEALTH FACILITIES • OUTPATIENT HEALTH FACILITIES • REHABILITATION/HABILITATIVE SERVICES • SPECIALIZED TREATMENT • SPECIALTY MEDICINE • SUBSTANCE ABUSE SERVICES 	<p>or:</p> <p>Narrow your search by selecting a more specific topic from the terms on the left.</p> <p>or:</p> <p>Start a new search</p>

9. **Provide information in search results about each resource’s location or which communities they serve, as well as a short description of each site (if available).** The Missouri Community Connection web site provides more of this type of information than the NC Health Info web site. For example, the NC Health Info site does not inform users which specific location(s) are served by the various web resources. Including as much information about each resource as possible will facilitate the process of narrowing down one’s options.

<p>AARP Phone: 816-561-0044 Address: 700 W 47th, #10, City, State, Zip: Kansas City, MISSOURI 64112 Description: Sponsor activities to improve life for older Americans and their families. Assist those who are aging to live a life of dignity, independence and purpose and to promote a positive image of the aging.</p>

10. **Allow users to change or expand their search from the search results page .** Although the NC Health Info allowed users to expand their search for neighboring counties or for the entire state from the results page, not all aspects of the search are adjustable from this screen. Enabling users to refine their search from the results screen (as done on superpages.com or travelocity.com) will eliminate the step of navigating back to the homepage.

Anesthesiologists--Web Sites Serving Rowan County	
<p>Page Contents</p> <ul style="list-style-type: none"> Anesthesiologists Credentials/Licensing Boards Statewide Resources <p>Change Search</p> <ul style="list-style-type: none"> Expand results to include neighboring counties Expand results to include all NC counties 	<p>Anesthesiologists</p> <p>Anesthesiology (Wake Forest University Baptist Medical Center) http://www.wfubmc.edu/anesthesia (336) 716-4498</p> <p>Children's Hospital (Carolinas HealthCare System) http://www.carolinashealthcare.org/services/womenchild/children.cfm (704) 355-2000</p> <p>Iredell Memorial Hospital http://www.iredellmemorial.org (704) 873-5661</p> <p>Pain Control Center (Wake Forest University Baptist Medical Center) http://www.wfubmc.edu/pcc (336) 716-2011</p>

11. **Provide users with appropriate related topics and ensure that these topics do not obstruct the user from the main content of the page.** The NC Health Info site contains a “Related Topics” section that appears to present useful links. However, this section is presented before the “Page Contents” options, which may be problematic. Present users with the contents of the current page first, followed by related information. Alternatively, place related information in the right-hand column as an adjunct.

Related Topics

- [Reproductive Health](#)

Page Contents

- [Birth Centers](#)
- [Breastfeeding Consultants](#)
- [Childbirth Educators/Coaches](#)
- [Clinics](#)
- [Health Care Equipment/Supplies](#)
- [Health Education](#)
- [Hospitals](#)
- [Midwives](#)
- [Organizations/Associations](#)
- [Support Groups](#)
- [Statewide Resources](#)

Birth Centers

[Piedmont Health Services, Inc.](#) (Piedmont Health Services)
<http://www.piedmonthealth.org/index.html>
 (919) 933-8494

Breastfeeding Consultants

[Centro de Salud para Mujeres](#) (Piedmont Health Services)
<http://www.piedmonthealth.org/spanish/birthcenterpagesp.htm>
 (919) 933-3301

[Family Practice Center at UNC Chapel Hill](#) (UNC Health Care)
<http://www.fammed.unc.edu/fpc/Fpc.htm>
 (919) 966-0210

[In-Home Breastfeeding Support Program](#) (Cooperative State Research Service)
<http://www.ces.ncsu.edu/depts/fcs/food/efnep/bf.html>
 (919) 906-1220

12. **Organize topic headings alphabetically, and provide users with the option of jumping to a specific letter. If a topic begins with a number rather than a letter, spell out the number.** Alphabetical ordering proved to be an effective way to organize topics on both web sites. However, the Missouri Community Connection site did not contain a mechanism for jumping to a specific letter of the alphabet, a function that enables users to quickly reach the desired information. The NC Health Info site provides a good model for this functionality, except when it begins lists with numbers rather than letters.

Programs & Facilities

After you choose a topic, you will be prompted to choose a geographic location.

Find a type of program or facility by its **first letter**:

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#)
[N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

1 [\(top of page\)](#)
 12 Step Programs see [Support Groups](#)

2 [\(top of page\)](#)
 2-1-1 Information and Referral see [Referral Services](#)

A

AA see [Alcohol Abuse Programs](#)
[Acupuncturists](#)
 Adult Congregate Facilities see [Assisted Living Facilities](#)
[Adult Day Care](#)
 Adult Group Homes see [Group Homes](#)
[Alcohol Abuse Programs](#)
[Alexander Technique](#)
[Ambulatory Care Centers](#)
 Animal Visitation Programs see [Pet Assisted Therapy](#)
[Aromatherapy](#)
[Art Therapy](#)
[Assisted Living Facilities](#)
 Associations see [Organizations/Associations](#)
[Ayurveda](#)

B

[\(top of page\)](#)
 Behavioral Care Services see [Mental Health Clinics/Programs](#)

13. **Provide cross-references whenever possible. For example under “Cigarettes,” direct users to “see Smoking.”** The NC Health Info site currently provides a wealth of cross-references. We recommend continuing with this approach in the design of the new site.

M [\(top of page\)](#)
 Medical Malls see [Ambulatory Care Centers](#)
 Medical Supplies see [Health Care Equipment/Supplies](#)
 Medicinal Herbs see [Herbalists](#)
[Meditation](#)
[Mental Health Clinics/Programs](#)
 Mental Hospitals see [Psychiatric Hospitals](#)
 Mental Retardation Programs see [Disability Programs](#)
 Movement Therapy see [Dance Therapy](#)
[Music Therapy](#)
 Mutual Help Associations see [Support Groups](#)

14. **Avoid the use of medical jargon (such as “smoking cessation programs,” “diagnostic services,” etc.).** We identified the use of medical jargon on both web sites. Because the layperson may be unfamiliar with such technical medical phrases, we recommend a voiding the use of jargon.

S [\(top of page\)](#)
 Self Help see [Support Groups](#)
[Senior Centers](#)
 Septic Tank Inspections see [Waste Management Services](#)
[Sex Education](#)
 Shared Housing see [Assisted Living Facilities](#) or [Group Homes](#)
[Sheltered Workshops](#)
[Shelters](#)
 Short Term Care see [Respite Care Services](#)
 Skilled Nursing Facilities see [Nursing Home Facilities](#)
[Smoking Cessation Programs](#)
[Social Services](#)
 Sound Therapy see [Music Therapy](#)
 Soup Kitchens see [Food Programs](#)
 Special Hospitals see [Hospitals](#)

- 10 Subtopics for: HEALTH CARE**
- [EMERGENCY MEDICAL CARE](#)
 - [HEALTH SCREENING/DIAGNOSTIC SERVICES](#)
 - [HEALTH SUPPORTIVE SERVICES](#)
 - [HUMAN REPRODUCTION](#)
 - [INPATIENT HEALTH FACILITIES](#)
 - [OUTPATIENT HEALTH FACILITIES](#)
 - [REHABILITATION/HABILITATIVE SERVICES](#)
 - [SPECIALIZED TREATMENT](#)
 - [SPECIALTY MEDICINE](#)
 - [SUBSTANCE ABUSE SERVICES](#)

14. **Ensure that terms are used consistently throughout the web site.** Throughout the NC Health Info site terms are used interchangeably to represent different things (for example “Breast Feeding” and “Breastfeeding Consultants”). To avoid confusion, consolidate similar terms or ensure that they lead to similar locales.

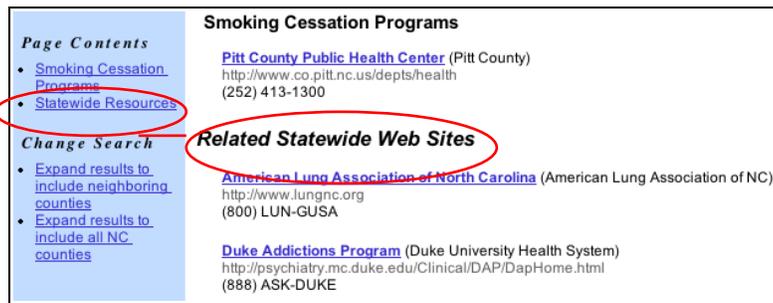
Breast Feeding--Web Sites Serving Orange County (Chapel Hill)

<p><i>Related Topics</i></p> <ul style="list-style-type: none"> • Reproductive Health <p><i>Page Contents</i></p> <ul style="list-style-type: none"> • Birth Centers • Breastfeeding Consultants • Childbirth Educators/Coaches • Clinics • Health Care Equipment/Supplies • Health Education • Hospitals 	<p>Birth Centers</p> <p>Piedmont Health Services, Inc. (Piedmont Health Services) http://www.piedmonthealth.org/index.html (919) 933-8494</p> <p>Centro de Salud para Mujeres (Piedmont Health Services) http://www.piedmonthealth.org/spanish/birthcenterpagesp.htm (919) 933-3301</p> <p>Family Practice Center at UNC Chapel Hill (UNC Health Care) http://www.fammed.unc.edu/fpc/fpc.htm (919) 966-0210</p>
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15. **Treat link text in a consistent manner.** Consistent treatment of links assists users in identifying what the options are on each page. We identified inconsistencies in the treatment of links on both web sites evaluated. On the NC Health Info site link color is consistent throughout the site, but the use of underlining is inconsistent. On the Missouri Community Connection site, color, underline, and icons are all used inconsistently for links.



16. **Ensure that link labels match the text of corresponding titles and headings.** For example, on the NC Health Info site, we found that the link for “Statewide Resources” connects the user to the “Related Statewide Web sites” section. Ensuring that such labels are consistent will assist users in identifying their location within the site.



17. **Avoid the use of uppercase text for links.** Uppercase font can contribute to poor readability when used with text links that are in close proximity to one another. We suggest using uppercase sparingly, and saving it for attention-getting information.



10 Subtopics for: HEALTH CARE

- [EMERGENCY MEDICAL CARE](#)
- [HEALTH SCREENING/DIAGNOSTIC SERVICES](#)
- [HEALTH SUPPORTIVE SERVICES](#)
- [HUMAN REPRODUCTION](#)
- [INPATIENT HEALTH FACILITIES](#)
- [OUTPATIENT HEALTH FACILITIES](#)
- [REHABILITATION/HABILITATIVE SERVICES](#)
- [SPECIALIZED TREATMENT](#)
- [SPECIALTY MEDICINE](#)
- [SUBSTANCE ABUSE SERVICES](#)

18. **Do not create separate functions of the site for resources that do not maintain their own individual web sites; rather, integrate these resources with those that do.** We found it confusing and unnecessary to designate a separate function for resources that do not maintain their own web sites. The NC Health Info site currently uses this approach with their “Directories” section. However, with this method, users may not understand why resources in the “Directories” do not appear when performing a general search. It might prove more intuitive to fold these resources into the general search topics and provide an appropriate sub-heading on the results pages.

19. **Include a function for users to “Suggest a site.” Ensure that this function is housed within the web site, rather than launching the user’s email program.** Including such a function may increase the capability of the web site’s search feature, while keeping the community involved. The “Suggest a site” function on the NC Health Info site was more robust than the “Contact CC” function on the Missouri site because it provided the user with pre-determined fields for gathering information. The “Contact CC” function simply launched the user’s default e-mail program, which may confuse the user and decrease the likelihood of sending useful suggestions.

Do you know of a local health resource in North Carolina that has a Web presence but is not already on our site? If so, please tell us about it. You may also use this page to offer your feedback and comments.

Web Site Information

Name of Web Site:

Web Address:

Topic of Web Site:

Tell us what you like about the Web site you're recommending:

20. **Ensure that users can easily access the homepage from any point within the site, by placing a “Home” link in an obvious and expected location.** The “Home” link on the Missouri Community Connection’s secondary-level pages is placed below the fold, rather than in the standard location (top one-third of the screen). In addition to its hidden location, the “Home” link is treated visually different than other primary links within the site, making it difficult to identify it as an important link. Note that many users will also expect to be able to reach the homepage by clicking on the site’s logo.

