Developing Usable Health Web Sites:
Lessons Learned from CDC.gov

NPHIC Briefing
Thursday, June 7, 2007

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CDC, National Center for Health Marketing
Why improve the CDC Web site?

• CDC’s health marketing channel with greatest reach domestically and globally
• Old site not sufficiently science-based
• Increase health impact through
  – Personalization, Participation, Presentation
• Improve through incremental improvements
  – Evolution vs. Revolution
### Metric Data

<table>
<thead>
<tr>
<th>Metric</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly Visits (average):</td>
<td>9 Million</td>
</tr>
<tr>
<td>Monthly Page Views (average):</td>
<td>37 Million</td>
</tr>
<tr>
<td>Number of Pages Viewed in the last 12 Months:</td>
<td>445 Million</td>
</tr>
<tr>
<td>Number of Monthly Searches:</td>
<td>1.8 Million</td>
</tr>
</tbody>
</table>

**Satisfaction Scores**
- American Customer Satisfaction Index (ACSI): **80 out of 100** (March 2007)
- CDC.gov has one of the highest ACSI scores among government Web sites.
Four Guiding Principles: 

1. **Research-based** – Decisions about CDC.gov (architecture, navigation, terminology, graphical interface, etc.) will be based on data, not opinions.

2. **User-centered** – CDC.gov will be based on users’ needs and wants, developed with continuous user input, and tested with users.

3. **Performance-driven** – Success will be measured in quantitative and qualitative improvements in user performance and user satisfaction.

4. **Collaboration-rich** – CDC.gov must be developed with and supported by CDC’s Web community.
Research-based, User-Centered Activities:

- Internal Interviews
- Call Logs and Emails
- Web Metrics and Search Logs (Omniture)
- American Customer Satisfaction Index (ACSI)
- Internal Survey
- External Interviews
- Baseline Usability Testing (Browse & Search)
- Card Sort
- User Research Notebook (Personas, top tasks, data collection results)
- Parallel Design Sessions
- First Click Usability Testing (including Tagline testing)
- Graphic Preference Testing
- First Click Usability Testing (round 2)
- Second Click Usability Testing
- Pre-Launch Usability Testing
What Do You Think? Concussion Tool Kit | Pandemic Flu

Help us improve our website...
more

Heads Up! Free CDC tool kit on concussions for high school coaches...
more

Pandemic Flu resources...
more

Podcasts
Listen on your computer or on the go...more

Add Hepatitis B Vaccination to Your Back to School List
Many states require hepatitis B vaccination before your child can go to school...more

Aim for Color
Improve your health while enjoying the season's colorful produce...more

HIV Rapid Test Training
CDC and VHS offer a HIV Rapid Test training package to increase reliability and accuracy of testing...more

Commemorating CDC's 60th Anniversary
CDC was founded on July 1, 1946...more

Extreme Heat
Helpful resources for students, teachers, and parents...more

Hurricane Preparedness
Learn how to prepare for this season...more

Asian Influenza
Latest CDC science on bird flu...more

CDC Partnerships
A new portal with information and resources for CDC's partners...more

CDC's New Health Protection Goals
CDC focuses on a set of health protection goals to become a more performance-based agency focusing on healthy people, preparedness, and healthy places. Public and partner review and comment is encouraged...more

past features

Programs & Campaigns
National Youth Violence Prevention Resource Center
Each day an average of 17 American youth are victims of violence...more

Ovarian Cancer Initiatives
CDC works with partners to identify factors related to early detection, treatment, and survivorship...more

Conferences & Events
National Health Promotion Conference
(Sept 12-14), Atlanta, GA...more

4th Annual Public Health Information Network Conference
(Sept 26-27), Atlanta, GA...more
How do users use CDC.gov? (ACSI)

What is the primary reason for your visit today?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Primary Reason for Visiting the Site Today?</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>My Health Needs</td>
<td>189</td>
</tr>
<tr>
<td>2</td>
<td>Data Statistics</td>
<td>178</td>
</tr>
<tr>
<td>3</td>
<td>Friend/Family health needs</td>
<td>105</td>
</tr>
<tr>
<td>4</td>
<td>Other</td>
<td>101</td>
</tr>
<tr>
<td>5</td>
<td>Scientific Articles</td>
<td>88</td>
</tr>
<tr>
<td>6</td>
<td>Patient Education</td>
<td>87</td>
</tr>
<tr>
<td>7</td>
<td>Academia Teaching</td>
<td>79</td>
</tr>
<tr>
<td>8</td>
<td>Student Project</td>
<td>70</td>
</tr>
<tr>
<td>9</td>
<td>Pubs, Posters, Pamphlets, etc.</td>
<td>67</td>
</tr>
<tr>
<td>10</td>
<td>Health Communication Campaign</td>
<td>48</td>
</tr>
<tr>
<td>11</td>
<td>Training</td>
<td>43</td>
</tr>
<tr>
<td>12</td>
<td>Information about CDC</td>
<td>27</td>
</tr>
<tr>
<td>13</td>
<td>Jobs Careers</td>
<td>21</td>
</tr>
<tr>
<td>14</td>
<td>Conference/Events</td>
<td>5</td>
</tr>
<tr>
<td>15</td>
<td>Grants</td>
<td>3</td>
</tr>
</tbody>
</table>

During my visit today, I was primarily looking for information on:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Primarily Looking for Information on?</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Diseases &amp; Conditions</td>
<td>273</td>
</tr>
<tr>
<td>2</td>
<td>Other</td>
<td>202</td>
</tr>
<tr>
<td>3</td>
<td>Disease Prevention</td>
<td>120</td>
</tr>
<tr>
<td>4</td>
<td>Symptoms</td>
<td>105</td>
</tr>
<tr>
<td>5</td>
<td>Health Promotion</td>
<td>79</td>
</tr>
<tr>
<td>6</td>
<td>Healthy Lifestyles</td>
<td>70</td>
</tr>
<tr>
<td>7</td>
<td>Vaccines / Immunizations</td>
<td>67</td>
</tr>
<tr>
<td>8</td>
<td>Emergency Preparedness</td>
<td>46</td>
</tr>
<tr>
<td>9</td>
<td>Workplace Safety &amp; Health</td>
<td>45</td>
</tr>
<tr>
<td>10</td>
<td>Treatments</td>
<td>37</td>
</tr>
<tr>
<td>11</td>
<td>Environmental Health</td>
<td>33</td>
</tr>
<tr>
<td>12</td>
<td>Injury Prevention</td>
<td>10</td>
</tr>
<tr>
<td>13</td>
<td>Traveler's Health</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>Birth Defects</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>Natural Disasters</td>
<td>7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Leadership Rank</th>
<th>#1</th>
<th>#2</th>
<th>#3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Public Health Professionals" /></td>
<td><img src="image2" alt="Healthcare Providers" /></td>
<td><img src="image3" alt="Consumers" /></td>
<td></td>
</tr>
<tr>
<td><strong>Primary Audiences</strong></td>
<td>Public Health Professionals</td>
<td>Healthcare Providers</td>
<td>Consumers</td>
</tr>
<tr>
<td><strong>Percent of Current Users:</strong></td>
<td>19% (N=215)</td>
<td>22% (N=246)</td>
<td>15% (N=170)</td>
</tr>
</tbody>
</table>
| **Primary Reason for Visiting the Site Today:** | 1. Data & Statistics  
2. Patient Education  
3. Scientific Articles | 1. Patient Education  
2. Data & Statistics  
3. Academia / Teaching | 1. My Health Needs  
2. Family / Friend Health Needs  
3. Data & Statistics |
| **Primarily Looking For:** | 1. Diseases & Conditions  
2. Disease Prevention  
3. Health Promotion | 1. Diseases & Conditions  
2. Health Promotion  
3. Vaccinations / Immunizations | 1. Symptoms  
2. Diseases & Conditions  
3a. Healthy Living *(Tie for 3rd)*  
3b. Disease Prevention *(Tie for 3rd)* |
<p>| <strong>Current Satisfaction</strong> | 73 | 82 | 69 |</p>
<table>
<thead>
<tr>
<th>Leadership Rank</th>
<th>#4</th>
<th>#6</th>
<th>#10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Researchers / Scientists</td>
<td>6% (N=64)</td>
<td>Educators / Teachers</td>
<td>0% (N=100)</td>
</tr>
<tr>
<td><strong>Percent of Current Users:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Primary Reason for Visiting the Site Today:</strong></td>
<td>1. Data &amp; Statistics</td>
<td>1. Academia / Teaching</td>
<td>1. Student Project</td>
</tr>
<tr>
<td><strong>Primarily Looking For:</strong></td>
<td>1. Diseases &amp; Conditions</td>
<td>1. Diseases &amp; Conditions</td>
<td>1. Diseases &amp; Conditions</td>
</tr>
<tr>
<td></td>
<td>3. Environmental Health</td>
<td>3. Healthy Lifestyles</td>
<td>3. Healthy Lifestyles</td>
</tr>
<tr>
<td><strong>Current Satisfaction:</strong></td>
<td>63</td>
<td>77</td>
<td>75</td>
</tr>
</tbody>
</table>
Healthcare Providers

Quick Facts
- 22% of Current Audience (ACSI Data)

Situation
- Healthcare Providers use the CDC.gov website to: educate themselves, aid their work, and find handouts for patients and staff.
- They are particularly interested in the diagnosis and treatment of specific diseases. While interested in prevention, they do not require in-depth information on it.
- Information on HIV, STDs, and recent outbreaks (written in plain language) are useful to hand out to patients.
- Healthcare Providers are interested in printing immunization schedules and growth charts for use by their staff and patients.


Frequency of Visiting CDC.gov


Age
- 45% are 50-64 years old
- 37% are 35-49 years old
Healthcare Providers

Did you find the information you were looking for?

- Yes 55%
- Still Looking 21%
- Partially 15%
- No 9%

Satisfaction
- Current Satisfaction Level: 82 / 100
- Least satisfied with
  - Navigation (77 / 100)
  - Search (78 / 100)
- Most satisfied with
  - Site performance (89 / 100)
  - Content (86 / 100)

What did you do first today?
- Browse (Navigation) = 58%
- Search = 42%

Primary reasons they come to the website:
1. Patient Education
2. Data & Statistics
3. Academia & Teaching

Does the website’s content provide:
- Not enough detail 21%
- Too much detail 2%
- Just the right amount of detail 77%

Primary information they look for:
1. Diseases & Conditions
2. Health Promotion
3. Vaccinations / Immunizations

### Rank of internal survey vs. actual uses (ACSI)

<table>
<thead>
<tr>
<th></th>
<th>Public Health Professionals</th>
<th>Consumers</th>
<th>Healthcare Providers</th>
<th>Researchers &amp; Scientists</th>
<th>Partners &amp; Grantees</th>
<th>Educators</th>
<th>Legislators &amp; Staff</th>
<th>CDC Employees</th>
<th>Journalists</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Survey</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td><strong>ACSI</strong></td>
<td>2 (19% (N=215))</td>
<td>3</td>
<td>1 (22% (N=246))</td>
<td>6 (6% (N=64))</td>
<td>10</td>
<td>5</td>
<td>8</td>
<td>9</td>
<td>7 (1% (N=7))</td>
<td>4 (9% (N=101))</td>
</tr>
</tbody>
</table>

Source: CDC.gov Internal Survey of Leadership

Steps in the usability test:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Demographics</td>
<td>Completed a background questionnaire</td>
</tr>
<tr>
<td>Initial Impressions</td>
<td>Answered questions about initial impressions of the website</td>
</tr>
<tr>
<td>Usability Scenarios</td>
<td>Performed real-world tasks on the website while thinking aloud</td>
</tr>
<tr>
<td>User Satisfaction</td>
<td>Rated their satisfaction using a post-test questionnaire</td>
</tr>
<tr>
<td>Post-Test Reactions</td>
<td>Answered questions about their overall satisfaction with the site</td>
</tr>
</tbody>
</table>

- Monday (pilot test): 2 stations were moderated (facilitator sat next to the user). Two stations were un-moderated (participant worked alone).
- Wednesday: All tests were moderated (4 stations)

Conducted the test using:
- Usability Testing Environment (UTE)
- Morae Recording Software
- TechSmith Web Cam
• **Purpose of the CDC.gov baseline usability test was to:**
  – Measure users’ abilities to perform tasks (*performance evaluation*),
  – Obtain users’ impressions (*preference/satisfaction evaluation*),
  – Identify difficulties involved in using the website, and
  – Suggest recommendations for improvement.

• **Intent was to:**
  – Test the “core” CDC website, global navigation, categorization, etc.
  – Establish a baseline to compare future improvements,
  – Identify what is working and what is not working, and
  – Use results of user testing to inform design changes for interim improvement prototypes (for additional testing).
### Data-Driven: Most Popular Pages

<table>
<thead>
<tr>
<th>Web Page</th>
<th>Number of Visits</th>
<th>Related Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPV</td>
<td>832,504</td>
<td>HPV Vaccine</td>
</tr>
<tr>
<td>BMI Home</td>
<td>802,208</td>
<td>Health – Obesity</td>
</tr>
<tr>
<td>Syphilis</td>
<td>801,631</td>
<td>Syphilis Trend</td>
</tr>
<tr>
<td>Lyme Disease</td>
<td>698,394</td>
<td>Lyme Disease</td>
</tr>
</tbody>
</table>

### Data-Driven: Most Popular Downloads

<table>
<thead>
<tr>
<th>Web Page</th>
<th>Popularity of Download</th>
<th>Related Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth Charts</td>
<td>#1 Most Popular</td>
<td>Growth Chart</td>
</tr>
<tr>
<td>Lyme Disease Treatments</td>
<td>#2 Most Popular</td>
<td>Lyme Disease Tests</td>
</tr>
<tr>
<td>Child Immunization Schedule:</td>
<td>#7 Most Popular</td>
<td>Immunization – MMR Vital</td>
</tr>
</tbody>
</table>
Improving CDC.gov
Updates, User Data, Governance, and Internet Resources for Improving CDC.gov
What We Tested - Data-Driven Test Scenarios

• Guidance for scenario development was obtained from:
  • Existing User Research
  • Call Center Logs (CDC INFO)
  • American Customer Satisfaction Index (ASCI)
  • Omniture Data
  • Internal Stakeholder Interviews
  • CDC.gov Web Council Review

• Scenarios were developed based on data, including:
  • Most popular pages
  • Most popular downloaded files
  • Most popular search terms, including:
    – Most frequent search terms used on other search engines to get to CDC.gov
    – Most frequent searches conducted on CDC.gov
• Overall Test Metrics
  – For All Scenarios and All Participants
  – Success Rate for Left Panel Scenarios
  – Success Rates
  – Average Time per Scenario
  – Average Number of Pages per Scenario
  – Satisfaction Rate

• Segmented Metrics for:
  – Health Professionals
  – Researchers / Scientists
  – Physicians / Nurses / Physicians’ Assistants
  – Consumers
Overall ‘Browse’ Success Rate for All Scenarios – All Participants

- Successful: 54%
- Unsuccessful: 46%

Overall ‘Search’ Success Rate for All Scenarios – All Participants

- Successful: 49%
- Unsuccessful: 51%
What was your initial impression of this website?

(BEFORE using the site)

Positive 65%
Neutral 6%
Negative 29%

Open-Ended Comments
What is your general reaction to the website? (AFTER using the site)

- Positive: 40%
- Neutral: 3%
- Negative: 57%

Open-Ended Comments
Top 10 Findings from Baseline Testing

1. Participants thought the website was credible.

2. Participants thought design was professional / attractive.

3. Many felt that the home page was busy, cluttered, overwhelming or just had too much information.

4. Participants who found the A-Z index like it and used it quite frequently to find information.

5. Participants thought that the website was inconsistent in layout, navigation and look and feel.
Top 10 Findings from Baseline Testing

6. Participants struggled to find information because of busy, cluttered pages.

7. Participants did not feel that the categories of information were clear.

8. Participants thought that they had to go through too many layers to find information.

9. Participants did not use the features and the page descriptions.

10. Participants wanted to search and thought they would be more successful if allowed to search.
New CDC.gov Homepage Features

- Interactive Photo Feature Area
- Topic-based Categories
- New Google Search Appliance/Engine
- Expanded/enhanced A-Z Index
- Top 20 @ CDC
- Tools and Resources Section
- CDC for You
- Text Enlargement Tool
- Tag Clouds
- Site Map
- What’s New on CDC.gov
- About CDC.gov
- Link to CDC.gov
New 2nd Level Topic Pages

- Healthy Living
- Diseases and Conditions
- Life Stages
- Safety, Injury, and Violence
- Environmental health
- Traveler’s health
- Emergency Preparedness and Response
- Workplace Health and Safety
Performance-Driven Results

• **More successful:** During the baseline usability test, users were assigned key tasks to find information on the old Web site. When asked to do the same tasks* on the new site, users were successful 78% of the time – a 22% improvement!

• **Improved efficiency:** On the redesigned site, users found information in 14% less time and required 41% fewer page views (or clicks) compared to baseline testing.

• **Greater satisfaction:** Users’ satisfaction with the new site improved dramatically – a 70% increase over satisfaction levels with the old Web site.

* Select tasks/scenarios (not all scenarios)
User Performance (task completion) increased

Baseline Test Success Rate: 62%
Pre-Launch Test Success Rate: 78%
First Click from Home Page – 74% were correct
Comparing Success and Time to Succeed
User Satisfaction – 70% improvement

Baseline Test: 46
Pre-Launch Test: 78

Improving CDC.gov
Updates, User Data, Governance, and Internet Resources for Improving CDC.gov
External Feedback on New CDC.gov

• “As a health professional, I use the CDC website every few months to seek out certain health information. Today I discovered that the site has been revamped. I just wanted to let you know that it is MUCH improved and extremely user friendly. The site as it is designed now is an asset to the American public.”

• “Information is so much easier to find!”

• “I particularly like the top 20 at CDC.gov. I really like how everything on the page is arranged. I can tell that usability really kicked in on this...the site looks very usable.”

• “As a school nurse frequently in need of quick accurate information, this looks like the greatest resource since Taber’s Medical Dictionary!”
External Feedback on New CDC.gov

• “I just wanted to commend you on an excellent job with this website. It is so informative and well written. Very well organized and easy to follow with practically every piece of information covered.“

• “I am planning a trip abroad and have learned so much information. This is another example of why the CDC is the most well informed and powerful organization in the world.”

• “I do a great deal of teaching on consumer health and I think the changes you have implemented make the site user-friendly. The content groupings, images to describe content, graphics and the A-Z Listing are all wonderful additions to the site. Thinking of how the ‘typical consumer’ searches was obviously kept in mind which is greatly appreciated.”

• “I especially like the RSS tool which will allow broad distribution of valuable health information. This will help publishers, but also service sites to tie into the content which makes CDC.gov so important.”
Collaboration-Rich
Top 10 Strategies for Increasing Internal Collaboration and Communication

1. Developed cross-agency **CDC.gov Council** composed of representatives from all CDC centers.

2. Conducted **internal interviews and online survey** to get CDC employee input on web audiences, priority tasks, strengths/weaknesses of the site, and more.

3. Developed **CDC.gov intranet site** and posted everything we did on the site.

4. Held quarterly **“State of the Web” town hall meetings** (open to any/all employees and contractors in CDC) to share data, plans, priorities, and progress to date.

5. Distributed **CDC.gov Progress Reports**, email newsletters that reported results, shared plans and priorities, and solicited feedback with CDC leadership and the web community.
Collaboration-Rich
Top 10 Strategies for Increasing Internal Collaboration and Communication

6. Initiated the eCDC Professional Development Series, seminars and courses related to Web development, content management, usability, technical issues, and new media.

7. Developed several internal **Communities of Practice (CoP)** on user experience, interactive media, and other topics to encourage discussion and collaboration around web at CDC.

8. Promoted web activities in **employee publications**, primarily CDC’s intranet site.

9. Reported **metrics** on early efforts/successes (podcasts, Email Updates, etc.)

10. Established a CDC.gov **blog** on the intranet site to encourage ongoing feedback from CDC staff and contractors.
Contact:

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