Strategies to Improve Healthcare Websites

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Abstract. Healthcare websites that are influential in healthcare decision-making must be evaluated for accuracy, readability and understandability by the average population. Most existing frameworks for designing and evaluating interactive websites focus on the utility and usability of the site. Although these are significant to the design of the basic site, they are not sufficient. We have developed an iterative framework that considers additional attributes.

Introduction. Online disease risk calculators are pervasive on the World-Wide-Web. Although these risk calculators are interactive, the sites do not consistently focus on tailoring their content to the general population. Over 47% of U.S. adults have difficulty accurately integrating information with text. Furthermore, even some well-educated adults have difficulty with numeracy. This has potential implications for healthcare decision-making. Websites that disseminate individualized health-related information need to be “user focused”. User-focused sites must be designed not only with good utility and usability, but must also address the functional literacy of the general population. This involves ensuring that the website text and cognitive artifacts such as graphs are not only readable, but understandable at a level that enhances decision-making. We have developed a multi-prong approach for the development of a colorectal cancer risk calculator on the World-Wide-Web primarily targeting the average healthcare consumer.

Methods. The basic prototype was designed using well-established methods including user, task, environmental, representational and functional analyses. These analyses provided the base components for the information display. In an iterative design process, we conducted a comparative analysis which assisted with defining alternative content and visual representations and a cognitive walkthrough which exposed potential first-time user problems. Reading grade level was considered in the development of all content and displays. Several graphical schemas were considered in the visual communication of risk. These displays communicate relative and cumulative risk using histograms, stick figures, text, percents, and natural frequencies. Once the basic structure and content were designed, the site was inspected and modified with a heuristic evaluation. The process evolved with the addition of two additional frameworks that provide guidelines for the development of credible healthcare content – HON Code of Conduct and the Guidelines for the AMA web sites.

We propose a triad of interconnecting methods that furthers the evaluation process of healthcare websites: content-based testing, expert-based testing and user-based testing. The content-based testing consists of evaluating the content display as well as readability of the site. The expert-based testing evaluates the quality and accuracy of content information by several domain experts – essentially a peer-review process. The user-based testing involves typical scenario-based testing of shell functionality and task completion, understandability of the site, taking into consideration the literacy level of the targeted population, as well as tools measuring user satisfaction.

Discussion. A framework has been developed for healthcare internet sites that builds upon well-established system design and evaluation methods. In addition to the typical suite of methods, we have added several other methods to ensure that the site content is not only functional and usable but addresses content display, readability, credibility and understandability to the average healthcare consumer. As connectivity continues to grow, it is imperative to construct reliable and valid tools that not only address utility and usability but also take into account health literacy levels.

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References