

10-1-2012

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## Recommended Citation

Moore, Mary PhD; Loper, Kimberly A.; and Van Schaik, JoAnn, "Seeking Medical Self-Diagnosis on the Web" (2012). *Faculty Research, Publications, and Presentations*. 29.

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# Seeking Medical Self-Diagnosis on the Web

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**Background:** The popular press has described how Web search engines are used by health consumers to enter symptoms and seek self-diagnoses.<sup>1</sup> Several surveys have established that a large number of people use the Web to search for health topics.<sup>1,2,3</sup> In an online survey of 12,262 people in 12 countries, Bupa Health Pulse reported that 46% of individuals who use the Internet for health information do so to self-diagnose.<sup>3</sup> Web users are unlikely to enter long strings of search terms;<sup>4</sup> typically use Google®;<sup>5</sup> generally review the first page of results; and rarely explore more than 30 results.<sup>6</sup>

**Methods:** After reviewing the list of ICD-9 codes and selecting 20 common diseases and conditions that are not immediately life threatening, investigators identified symptoms for those diseases and conditions as listed in the *Merck Manual* and Lange's *Current Medical Diagnosis and Treatment*. The described symptoms for those diseases and conditions were converted to lay language using the *Consumer Health Vocabulary Initiative* database and consulting a focus group of 7 health consumers with educational attainments ranging from high school graduation to a masters degree (IRB exemption 20110828). Participants were asked to describe no more than 5 symptoms for each disease or condition and select the terms they would use to enter into a Web search box. They were then asked to list the sequence in which they would enter the terms. The terms obtained from the focus group were entered into Google. The first 30 results of each search were analyzed to determine if the expected diagnosis appeared and, if so, where it ranked among the results. Websites were analyzed for the type of Web domain (.com, .edu, .gov, .org, or other); currency; if they posted warnings against being used for self-diagnosis or included recommendations for consulting a health care provider; for adherence to Health on the Internet (HONcode) standards for authority and attribution; if the site attempted to sell goods or services; and if irregular or unexpected results were encountered.

**Results:** Of the 600 Websites analyzed, only 11% (66) yielded terms consistent with the expected diagnoses. Some sites yielded false positive results because they included listings for many different symptoms, diseases, and conditions, such as multiple patient postings (blogs or chat sites); listings of pharmaceuticals with multiple side effects; or clinic sites that included long lists of possible symptoms for patients to check. In the end, only 8.5% (51/600) of sites were usable for differentiating the expected diagnosis from others. Usable sites containing the expected diagnoses appeared on the first page of the Web results in only 2% (14/600) of the cases. Most results came from .com Websites. Most sites listed a current date, but it was often unclear whether this was an auto-generated copyright date or the date of actual content review. Many, but not all, sites included disclaimers about using the site for medical diagnosis. Most sites attempted to sell goods or services. Few sites included HONcode certification. Each search included some unexpected results. For example, searching symptoms for low blood pressure yielded the lyrics of the song, "*I'm Not a Vampire*," and also a link to carbon tetrachloride poisoning. Searching for symptoms of arthritis led to a list of 50 various products on eBay®.

**Conclusions:** This was a study of simulated behavior health consumers might use when searching the Web for self-diagnoses, however individuals suffering from the actual symptoms might use different search terms. Furthermore, the focus group was specific to the location of this study. This exploration indicated that these Web searches using common lay terms for symptoms yielded only a limited number of germane results. Readers cannot assume the most relevant results will appear on the first page of Web search results. Consumers must carefully weigh the relevance, authority, ulterior motives, and currency of each Web site; and seek expert consultation from qualified healthcare providers.

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