

## **Chapter XI**

# **Semantics and the Medical Healthcare Search**

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## **Abstract**

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*This chapter discusses issues related to semantics and the medical Web. Much health information is available on the Web, but not always effectively found by users. Studies examining various aspects of medical Web searching show that searchers' do not always use correct medical terminology. This chapter reports results from a longitudinal study of medical/health related searches using commercial Web search engine query data from 1997 to 2004.*

## **Introduction**

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Web studies are a major interdisciplinary area of research, including user behavior modeling and Web search engine performance (Spink & Jansen, 2004). Since the 1990s Web search engine crawling and retrieving studies have evolved as an important area of Web research.

The Web also provides growing opportunities for people to learn more about medical and health. This chapter provides an overview of the research into the current state of Web

searching for medical/health. A major problem for the Web and medical industry, and medical consumers, is the effective access to health care information. There exist a growing number of identified problems in managing the complex relationships inherent in medical semantics and the semantic Web (Berners-Lee, Hendler, & Lassila, 2001). In the U.S., The National Library of Medicine's (NLM) long-range plan includes the need to promote the use of health information by both the public and health professionals. The NLM influences the public indirectly by making current authoritative information available. Their proposed strategy may narrow the knowledge gap between consumers and health professionals. Identifying the use of controlled medical terminology by commercial Web search engines user is inherently useful for training programs, access portals, and scalable information resources that are accessible to people of disparate cultures, languages, and knowledge levels. The use of evidence-based medicine in US healthcare means the need to educate consumers within the health care system.

As we move towards more effective medical/health information access via the Web, we need to know more about consumer use of the medical Web: how are they searching and how often? Medical and health information seeking constitutes an important use of the Web. The Pew Internet Project (2002a, 2002b) one of the largest national surveys accomplished to date, estimates that 62% of Internet users (some 73 million people living in the United States) search the Web for health information. Results from the Pew study indicated that 93% of health information seekers surveyed looked for information about a specific illness or condition, 65% sought information on exercise, nutrition or weight control, 64% for prescription drugs, and 33% for sensitive health information. More than half the respondents reported using the Web for health information every few months or less frequently. Clearly, many American are using the Web for medical and health information, often as a supplement to seeking help from medical providers.

However, Phillipov, and Phillips (2003) recently reported that health queries accounted for fewer than 1% of the top 300 queries on the Internet (excluding pornography), and they concluded that information on both general health and specific disorders have a very low priority for people using Internet search engines. We believed that the authors' methods failed to account for the magnitude and variety of Internet searches, and thus did not give an accurate estimate of the overall number of health-related Internet searches performed in the sample time period. To address this, we analyzed the frequency of use of Web search-engine keywords for health-related subject matter in several large databases of Web queries from the Excite and AltaVista search engines.

In the next section of the chapter we first provide an overview of the recent research studies examining medical/health Web searching.

## **Related Studies**

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Web search studies are growing in importance. The Pew Internet and American Life Project (2005) recently showed that many people do not understand Web search engines capabilities. Some 84.1% of people online use a Web search engine every month to find

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