Chapter XVI

Evaluation of a Tool to Enhance Searching for Useful Medical Information on the Internet

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Abstract

Evidence-based medicine (EBM) requires appropriate information to be available to clinicians at the point of care. Electronic sources of information may fulfill this need but require a high level of skill to use successfully. This chapter describes the rationale and initial testing of a system to allow collaborative searching and ontology construction for professional groups in the health sector. The approach is based around the use of a browser using a fuzzy ontology based on the National library of medicine (NLM) unified medical language system (UMLS). The results suggest that a tool that can assist users in finding information by recording their preferences and preferred meaning of text words can be usable by healthcare professionals. This approach may provide high-quality information for professionals in the future.

Introduction

Evidence-based medicine (Sackett, Richardson, Rosenberg & Haynes, 1997) has become increasingly important in the modern healthcare industry. Indeed the concept of basing practice on evidence is even extending to the software engineering industry (Kitchenham, Dyba & Jorgensen, 2004). Care that is not based on evidence has become increasingly indefensible from professional, safety and economic points of view. Electronic access to high-quality information can improve the professional knowledge of clinicians (Leung et al., 2003), and is very popular (Westbrook, Gosling & Coiera, 2004). However there are a number of difficulties associated with providing high-quality information to support EBM.

Assessing and finding appropriate information is difficult and can be time-consuming. This is partly due to the continuing difficulty users have in navigating the interfaces used by various systems and also because of the lack of training available. Indeed if the concept of just-in-time information retrieval, as an aid to clinical decision-making at the point of care is to be realized (Gardner, 1997), then complex time-consuming strategies performed by trained users are not possible. Recent work, looking at the usage of the Clinical Information access program (CIAP) in New South Wales (Gosling, Westbrook & Coiera, 2003), has emphasized cultural barriers to use of online sources of information in a clinical setting, and this includes a perceived lack of skill in information retrieval by clinicians. Consumer medical information is also now being provided by government agencies for example NHSdirect in the UK (UK National Health Service, 2007), and Medline Plus in the USA (U.S. National Library of Medicine, 2007). Privately funded consumer portals are also becoming more common such as WebMD (WebMD Inc., 2005).

In assessing the usefulness of information sources, a framework to identify the aspects that are important needs to be established. Existing well-known frameworks such as health on the net (HON) (Health on the Net Foundation, 2003), and Netscoring® (Centrale Sante, 2001), are more concerned with the sources and reliability of the information than its usefulness. Three dimensions of usefulness have been identified, based partly on the work of (Sackett et al., 1997), and some of the limits used in PUBMED, and other information sources. They are information quality, clinical relevance and clinical usefulness,. The aspects of each dimension are outlined in Tables 1-3.

Diversity

Both the users and sources of information are characterized by diversity, and current examples of information portals reflect this. The CIAP system, described by Moody & Shanks (1999), is particularly interesting as a “top-down” approach to