Remote access to medical information for professionals and patients.

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Maojo V, Lázaro P, Martín F, Crespo J, Pazos A.

Abstract

Purpose: Our research was motivated by the personal experience of one member of our group, who underwent surgery to extirpate an acoustic neuroma. After visiting several specialists, where he was told his chances of preserving his hearing were nil, he looked for a different alternative by searching the World Wide Web (WWW). He found a surgeon in another country whose experience with a different surgical technique suggested he had a 70% chance to preserve hearing. After successful surgery, his hearing is now 95%. The excellent outcome of this intervention suggested the WWW could provide useful information regarding patient preferences and choices, and comparisons of clinical practice. However, more advanced tools are needed to effectively search health information on the WWW. The objective of our work is to develop a new methodology to improve access and retrieval of medical information from databases located at remote clinical sites over Internet.

Methods: Our methodology integrates several technologies to enhance access to medical information: (1) access to heterogeneous databases independently of data structures, hardware and software variability; (2) a vocabulary server and a controlled terminology to aid users' searches; (3) a retrieval system using intelligent agents; and (4) a graphical user interface using dynamic man-machine interaction.

Results: With our system, users can specify the kind of search they prefer, filtering and retrieving relevant information from remote databases. Different database schemes from various sites can be used to create a unified model, giving users a virtual vision of a single, local database. The architecture of the system and some examples will be shown. Our prototype will be tested to access medical information in a Spanish medical research setting, the Institute of Health Carlos III.

Conclusions: We have designed a new architecture to facilitate collaborative efforts among different institutions, sharing data and software components, that can also be used for different goals. These methods will give consumers a more comprehensive view of medical care, by enabling them to compare hospitals, physicians, quality of care, procedures, outcomes, and costs.