Enterprise Search in Medical Data

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Hospitals routinely collect huge amounts of data in patient records, in the form of narrative text, structured and semi-structured information (e.g. laboratory reports) and images. However, this information is usually not used to its full potential – a patient's record is in most cases only accessible as a single entity through a patient identification. Some examples have shown the advantages to be gained through mining huge numbers of anonymised medical records, such as the discovery of the dangers of the Vioxx drug by mining the Kaiser Permanente patient records. However, search within these records for medical care has not been used to full advantage, even though it can be modelled as an Enterprise Search with the additional constraint that the medical records must be anonymised before being presented as the result of a search. The talk will discuss a number of situations in which search can be useful in medical care, including:

- Searching for "similar" patients: If a physician is unsure of how to treat a patient, searching for health records of "similar" patients and viewing how colleagues treated these patients could be a help. This fits in well with the common practice in medicine of asking a colleague for past experience in similar cases and also case-based reasoning.
- Searching for "similar" radiology images: If a radiologist is unsure of the significance of an unusual feature of a medical image or a region of interest in it, retrieving images with similar features and viewing the analyses of colleagues (including potentially treatments and outcome) could be of great help.
- Linking medical records to guidelines: Based on the information stored in a medical record, the system could suggest the most pertinent medical guidelines to be used for a specific patient, so a step towards personalized medicine.
- Search within medical records: Many medical records are stored as a chronological sequence of documents. Being able to search within these documents could give a physician a more rapid overview of the patient's medical history than currently possible.

The challenges in implementing these Enterprise Search solutions in the medical domain will be discussed including current tendencies of social networks that may also include patient data such as http://patientslikeme.com.