New healthcare portal offers increased patient safety, empowerment

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IBM at CeBIT: Next-generation health portal helps patients be more involved in managing their own medical profiles, allowing physicians and patients to benefit from advanced services that can prevent harmful drug interactions, send alerts for medical problems, examine genetic profiles to prevent over or under dosage of medication, and more. Credit: PRNewsFoto/IBM

Today IBM announced the next evolution of the patient portal, significantly expanding the types of information, alerts, recommendations and interactive coaching healthcare providers can offer to their patients online.

The IBM Patient Empowerment System goes beyond simply allowing patients to schedule appointments online or access a personal health record. The portal is based on new technology developed by IBM Research in collaboration with physicians and administrators of the

Gacheon University Gil Hospital in Korea. Among the largest medical centers in Korea with approximately one million patients, the hospital recently decided to provide physicians and patients with access to the portal as part of a pilot project to increase efficiency and reduce costs.

The IBM Patient Empowerment System is a standards-based platform, enabling patients to integrate and manage their healthcare data for all medical needs, receive personalized recommendations or alerts for safer medical treatment, and immediately access data from a vast range of sources including: third-party health portals, hospital electronic medical record systems, sensors, home devices for monitoring health conditions, U.S. Food and Drug Administration (FDA) alerts, medical sites like PubMed, and more. IBM is previewing the system this week at CeBIT in Hanover Germany.

"Today, patients want to be more involved in managing their clinical data, and are eager to discover relevant and useful medical information for their benefit," noted Dr. DongKyun Park from Gacheon University Gil Hospital in Korea. "By giving patients access to information that is relevant to them in an easy and understandable form, we can greatly improve patient safety during medical treatments."

The system's easy-to-use analytical services can reduce costs, increase safety and improve patient satisfaction. By integrating social and medical data from multiple sources, the system allows patients to take an active role in their treatment, bringing the interaction between patients and caregivers to a new level of collaborative teamwork.

The system is also designed to protect privacy at various levels of granularity, enabling members to exercise fine-grained control over the level of information in their profile that can be viewed by others and its usage.

"Most patients do not have the same access to information available to physicians, such as treatment updates or new warnings from the FDA," said Joseph Jasinski, IBM Research. "And physicians are not always privy to ongoing patient updates, such as eating habits or long-term monitoring of vital signs. These partial pictures limit the level of care that physicians can provide, as well as the care patients can provide for themselves. The IBM Patient Empowerment System merges these realms, bringing important data to both parties."

Although more public sources for medical information are becoming available on the Internet all the time, this onslaught often leaves patients more confused rather than more knowledgeable. Weeding out relevant and accurate information in this sea of data is difficult for the typical patient but the IBM Patient Empowerment System uses expert analytics to take into account a patient's personal medical history and offer decision support information that is appropriate for them.

One example where public knowledge could improve patient safety involves personalized alerts for adverse drug events (ADE) — incidents where different medications could be dangerous when taken together. The Kaiser Family Foundation estimates that there are 7,000 deaths per year due to medication errors alone — about 16 percent more deaths than those attributable to work-related injuries.

ADE contributes greatly to added expenses in hospitalization and insurance costs every year. This service uses the platform's knowledge-bases alongside public repositories for drug-drug, drug-disease, drug-food, and pharmacogenetics interactions; these are then analyzed together with the most current patient clinical and genetic data. The output is an alert that can be given at the point of care to avoid potential harm associated with various drug interactions.

For example, if a patient is already being treated with prescription

medicines and wants to take an over-the-counter medication, she would log into the IBM Patient Empowerment System and add the name of the drug to her list of medications. The system immediately crawls through her medical data, performs deep analytics, and then issues a warning message with details about a potentially dangerous interaction between one of the drugs she's already taking and the new one.

Because the system incorporates the patient's genetic profile, it can also issue warnings to the patient and prescribing physician if certain dosages or drug combinations are problematic given her personal genetic variations. Such genetic variations can lead a person to metabolize certain drugs differently than the greater population, raising the risk of dangerous adverse drug reactions. This information might otherwise be unavailable or even unknown to her physician.

Other smart services developed as part of this healthcare portal include socio-medical search and personalized recommendation services. The system maintains a unique dataspace that represents social entities, such as patients and healthcare personnel, and their relationship with medical entities, such as medications, allergies and treatment plans. The IBM Patient Empowerment System also offers search capabilities and recommendations about patients who suffer from similar problems, potential treatment plans, expert physicians, and more. These features are built on IBM's Big Data Analytics platform, which can process structured and unstructured data at scale and speed not possible with traditional data warehouse technologies, allowing the system to discover relations hidden in the data and correlate with external information.

Because the system is designed as a standards-based clinical data warehouse and supports standard interoperability profiles, it can also immediately incorporate any medical information from sensors, home medical devices, monitoring systems, labs, or hospital information systems. Moreover, this interoperability makes it possible to add new

data sources or services at any time.

This solution is just one example of how IBM researchers are helping transform the healthcare industry. IBM is also focused on the area of health analytics, which uses sophisticated software to analyze vast amounts of medical data from many different sources at once to quickly help doctors make more informed decisions. For example, IBM's Watson computing system has the ability to analyze the meaning and context of human language to provide physicians with helpful information for diagnosing and treating patients. Helping doctors unlock important knowledge buried within huge volumes of information, technologies like Watson pave the way for a more evidence-based healthcare system that offers more informed diagnosis and treatment for patients – at lower costs for providers, insurers and patients.

Source: IBM