Guang Dong Hospital of Traditional Chinese Medicine

Bringing patients the best of both worlds

Smart is...

Using smart language algorithms to bridge the differences between traditional Chinese and Western medicine—and optimize healthcare delivery

As the largest hospital in China’s most populous province, Guang Dong Hospital of Traditional Chinese Medicine (GDHTCM) is an ideal proving ground for the country’s burgeoning healthcare reform initiatives. Tackling the biggest systemic problem in China’s healthcare system, GDHTCM created a first-of-a-kind solution that blends clinical and patient data from traditional Chinese and Western medicine into standardized records, vastly improving the hospital’s ability to coordinate care and optimize utilization across the hospital network.

At the core are advanced language algorithms that transform the unstructured semantics of traditional Chinese medicine into standardized medical terminology that makes the coordination and optimization of clinical care possible.

The signs abound that China has entered a new phase in its ongoing development as a nation. Fueled by unprecedented economic growth, China has stepped up to a more prominent and assertive role in shaping global political and economic affairs. China’s maturation as an economy has induced major social changes within the country, the most prominent of which has been an influx of workers from rural areas into urban and coastal economic hotspots to meet the soaring demand for labor. To adapt to these shifts—and to pave the way for continued prosperity—the Chinese government has begun to invest heavily in updating and modernizing the nation’s physical infrastructure. This trend is behind China’s emergence as a world leader in such futuristic technologies as renewable energy and high speed rail transport.

Not surprisingly, China’s rapid development and demographic changes have major implications for social services. As the standard of living in China has risen, so too have consumer expectations for affordable, accessible and high quality healthcare services. While the government has invested heavily in new healthcare facilities, the steadily growing demand for services has placed increased strain on healthcare resources, resulting in longer waits, higher costs and often inefficient utilization of services.

What’s driving reform in China?

A recently enacted plan to reform the country’s healthcare system includes a resolution to provide universal health coverage to all citizens by 2011. To support this initiative, China’s Ministry of Health (MoH) is finding new ways to improve healthcare delivery, including establishing common care standards and practices to encourage better patient care and increased cooperation among medical facilities.
Business benefits

- Lower costs and improved patient access due to more efficient utilization of the GDHTCM network
- Increased efficiency through patient-centric coordination of care, enabled by improved data sharing
- Improved outcomes through the use of analytics to determine the most effective treatments from both traditional Chinese and modern Western modalities
- Leveraging of standardized, patient-centric clinical data to develop more personalized treatments

One systemic issue the MoH seeks to address is a tendency for patients to access and utilize healthcare services inefficiently. Under the ideal triage model, patients enter the system through local community hospitals, which then refer them to the appropriate secondary or tertiary care facility as needed. Instead, patients tend to circumvent community hospitals in favor of tertiary facilities, where resources are tighter, costs per patient are higher and efficiency is lower. This fragmented delivery of care makes it more difficult to extract and share clinical best practices. At the same time, because facilities do not share the same records systems, information, including tests, needs to be repeated when patients are transferred to a different facility.

China’s MoH realized that to improve efficiency and access, it needed to change this balance, by promoting a more prominent role for community hospitals and by facilitating collaboration among healthcare providers. With that goal in mind, the MoH engaged in discussions with IBM on how to make this vision a reality. That’s when Guang Dong Hospital of Traditional Chinese Medicine (GDHTCM) emerged as the ideal test bed for a new model of hospital information sharing. The largest and busiest hospital in China’s most populous and prosperous province, GDHTCM epitomized the forces that China’s reform effort would need to address. Further strengthening the rationale was the hospital’s strong focus on medical research, which would benefit from the health analytics capabilities to be enabled by the proposed solution.

Working closely with China’s MoH and GDHTCM, IBM developed Clinical and Health Records Analytics and Sharing (CHAS), a first-of-a-kind medical records system that consolidates medical data from multiple systems into a single record that can easily be shared. Medical information of various types and formats can be tagged to refer to individual

Smarter healthcare: Joining East and West to enable coordination of care

<table>
<thead>
<tr>
<th>Instrumented</th>
<th>CHAS consolidates medical data from multiple records systems into a single record and embeds metadata tags that enable understanding.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnected</td>
<td>Advanced algorithms integrate and convert complex clinical and patient information into standardized, patient-specific records.</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Insights enabled by common systems enable improved diagnosis processes and the best treatment for a patient’s illness or condition.</td>
</tr>
</tbody>
</table>
Solution components:

**Framework**
- IBM Health Integration Framework

**Software**
- IBM DB2® 9 Data Server
- DB2 V9 pureXML®
- IBM WebSphere® Application Server
- IBM Lotus® Expeditor
- IBM InfoSphere™ DataStage®

**Services**
- IBM Software Group Services

**IBM Research**
- IBM China Research Laboratory
- IBM Almaden Laboratory

“**Our hospital has a long tradition of excellence, not only in medicine but in clinical research and teaching. We are committed to maintaining our exacting standards.**”

—Mr. Lv Yubo, president, Guang Dong Hospital of Traditional Chinese Medicine

patients, and hospitals can combine and share traditional Chinese and modern Western medical information within a single record. Leveraging the IBM Health Information Exchange solution, CHAS incorporates sophisticated language processing algorithms (developed within the IBM China Research Laboratory) to identify and tag patient records based on semantic similarities within unstructured clinical data. Bridging the formidable semantic gap that separates traditional Chinese and Western medicine—and employing healthcare industry standards such as HL7 Clinical Document Architecture (CDA)—enabled GDHTCM to standardize health records that can be shared across its network of facilities, as well as with other healthcare providers.

But to get there, GDHTCM needed to address perhaps the most significant challenge to sharing and leveraging medical information in China—the need to simultaneously recognize traditional Chinese medicine and Western medicine, whose principles, approaches and semantics are different to the core. For Chinese healthcare providers in general and GDHTCM in particular, incorporating both branches of medicine is integral to China’s plan to adopt more modern, scientific approaches to health care. One example is the ability to combine and analyze both Eastern and Western medical data for individual patients, enabling researchers and clinicians to analyze the effects of both disciplines in order to determine the best treatment for a condition or illness and to promote increased inter-hospital and intra-hospital data sharing to improve overall efficiencies.
The inside story: Getting there

The stakeholders
The decision to develop and fund CHAS involved the interplay of Chinese government entities and stakeholders within the GDHTCM. While the MoH served as an advocate for moving ahead with the initiative, it also needed to address the concerns and input of the State Administration of Traditional Chinese Medicine, a subsidiary bureau responsible for regulating the TCM industry. Within the hospital, the main advocates for the proposed solution were the directors of the hospital’s research and medical quality departments, respectively, who were strong believers in the value of IT in getting GDHTCM to the next level.

Moving ahead
It wasn't a traditional business case that ultimately convinced Lv Yubo—the hospital's president and key decision maker—to go ahead with the implementation. Indeed, the project’s overall strategic significance to the hospital transcended traditional measures of ROI. It was, instead, the success of the proof of concept and pilot that GDHTCM conducted to determine whether CHAS could meet its demanding functional requirements for clinical data sharing. Once approved, the biggest implementation challenge was integrating and coordinating functional areas with limited understanding of the “big picture” in terms of how information flowed within the enterprise. Rectifying this required a series of interdepartmental workshops in which workflows were comprehensively mapped out as a precursor to process optimization.
While the CHAS solution is an important foundation for transforming its clinical and research capabilities, GDHTCM is already achieving its immediate goal of promoting patient-centered collaboration and the coordination of care across different facilities in the GDHTCM network. The hospital is proving that optimized care isn’t an abstraction. The ability to shift patients to where they can be most effectively served in the system—for instance, routing checkups and routine procedures to community hospitals, with more complex issues referred to specialists—leads to better utilization of and improved access to healthcare resources. What’s more, the ability to share standard health records across hospitals means costly tests don’t need to be repeated.

Finding the best, from East and West

By vastly improving its ability to share clinical data, GDHTCM also expects CHAS to improve outcomes and the quality of care by shedding more light on which treatments and techniques work best—whether they draw from traditional Chinese medicine, modern Western medicine or both. The underlying breakthrough of CHAS is the injection of intelligence into clinical data management, which, in effect, makes it possible to convert the wisdom embodied in traditional Chinese medicine into standardized data that can be factored into care decisions and rigorously measured for effectiveness. Ultimately, it opens the door for clinicians to develop highly personalized treatment plans that incorporate aspects of both modalities.

To president Lv Yubo, GDHTCM’s work with the MoH and IBM has made the hospital a pioneer as China embarks on the healthcare transformation path. “We see the adoption of patient-centric processes and technologies as critical to achieving our vision of an efficient, cost effective and accessible health care system,” says Lv Yubo. “Our ability to leverage IBM’s research, technology and healthcare expertise is a big reason we’ve made major advances toward that goal.”
For more information
To learn more about how IBM can help you transform your business, please contact your IBM sales representative or IBM Business Partner.

Visit us at: ibm.com/smarterplanet/healthcare