



### Business challenge

A major healthcare provider in Saudi Arabia sought a robust clinical decision-support solution to assist its providers in making informed clinical decisions, avoid medical errors and reduce costs.

### Transformation

A major healthcare provider in Saudi Arabia turned to IBM Business Partner AI-Shehail to implement the IBM® Micromedex® with Watson™ clinical decision-support tool and develop a comprehensive formulary available online and on mobile devices to help providers make informed clinical decisions, reduce adverse events and adhere to drug utilization policies.



Dr. Rao Khan  
Managing Director -  
Medical Division  
IBM Business Partner  
AI-Shehail & Co.Ltd.

## Results

### 3,700 drugs in a nationwide formulary

provide formulary status, restriction details and guidelines and protocols

### Online and mobile drug information and formulary

provide access to content and formulary information on multiple platforms

### AI-assisted or traditional drug search capability

offers flexibility to find information to support clinical decision-making

# AI-Shehail & Co.Ltd.

## Evidence-based, AI-assisted clinical decision support in Saudi Arabia

AI-Shehail has been serving the Saudi Arabian healthcare market since 1982. In addition to its Riyadh headquarters, the company covers the span of the Saudi Kingdom through additional offices in Jeddah and Dammam. AI-Shehail is dedicated to the prevention and treatment of complicated diseases, and to helping Saudi society improve the health and well-being of its nationals and expatriates. It provides a wide range of pharmaceuticals, computerized clinical information systems and medical equipment produced by world-renowned manufacturers.

*“In my opinion, the availability of the Micromedex clinical decision-support information will help prevent adverse events, save lives and significantly reduce healthcare costs.”*

—Dr. Rao Khan, Managing Director - Medical Division, IBM Business Partner AI-Shehail & Co.Ltd.

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## A vision for healthcare in Saudi Arabia

Since its founding in 1982, Al-Shehail has served the healthcare market in Saudi Arabia with advanced pharmaceutical and health information offerings. The company's vision is to constantly evolve its services to keep pace with the changing needs of the healthcare industry and its customers, and to provide reliable and professional services to the Saudi healthcare market.

When the company won the contract to distribute the Micromedex clinical drug information tool in Saudi Arabia approximately 35 years ago, it was only offered on microfiche. Over the years, Al-Shehail has kept pace with changes to the tool and technology, and today offers it online and on mobile devices.

In the early 1990s, Al-Shehail decided to offer the tool on a subsidized basis to pharmaceutical schools in Saudi Arabia. This created a market of users trained on the tool in their pharmacology classes. These users then expected to have access to it in their professional positions after graduation. "Now, after 30 years, these former students are in leadership positions; they are the decision-makers," says Dr. Rao Khan, Managing Director of the Medical Division at Al-Shehail.

In this way, Al-Shehail captured a large percentage of the country's healthcare market. "Micromedex has become the gold standard for drug information, and now we are enjoying decades old, time tested, dependable and professional partnerships with our customers," says Dr. Khan.

One exception remained: one of the largest healthcare provider organizations in Saudi Arabia. Historically, several of its larger hospitals subscribed to the Micromedex tool on an ad hoc basis, but the provider did not use it across the system.

The provider wanted to offer world-class healthcare, second-to-none in Saudi Arabia. With 350 hospitals and more than 2,000 primary care centers around the country, some in very remote locations, the provider had been challenged to offer the same standard of care throughout the system. Unfortunately, over time, the number and cost of medical errors across the provider system had risen. According to Dr. Khan, "Medical errors became one of the major causes of debt and medical disability, and this was consuming a huge amount of the provider's budget."

A leader in the healthcare provider organization set out to reduce medical errors throughout the healthcare system. With a strong IT

background, he sought a digital solution that would allow providers to avoid medical errors and reduce costs. He wanted to implement a single, comprehensive evidence-based compendium of clinical data for pharmacology, disease, toxicology and for patient education in both English and Arabic.

Stakeholders in this initiative met in 2018, where they reviewed the AI and natural language processing capabilities of IBM Watson® technology and evidence-based content in the Micromedex with Watson solution from IBM Watson Health™. After the visit, the provider organization set forth the vision of using the Micromedex content as the foundation for drug information across the system. The organization envisioned it in use in every hospital in every part of the country, with availability on mobile devices for every provider to access. In addition, it sought to transition to a unified formulary for all medical organizations in Saudi Arabia, not just those affiliated with the provider organization.

## Trustworthy clinical decision support tools

In a far-reaching, three-year, renewable contract with Al-Shehail, the large healthcare provider organization chose the Micromedex with Watson tool as its gold

standard for drug information, toxicology, diseases, acute care and alternative medicine. Available through an internet portal online or on mobile devices, the comprehensive resource provides healthcare professionals with clinical decision support for informed treatment decisions. The Ask Watson feature, powered by Watson AI technology, allows natural language searching of the Micromedex summary drug content.

Working closely with a team from Al-Shehail, the healthcare organization also developed an online formulary of more than 3,700 drugs for use by healthcare providers throughout the country. This formulary is available on both the Android and iOS operating systems through a custom app that was created collaboratively. The formulary is also available offline for areas with spotty internet connections.

Al-Shehail integrated the formulary with the Micromedex information system, allowing users to search for a drug and see whether it is a controlled substance, a centrally planned drug or restricted, based on Micromedex-based color coding. The integrated solution also provides a complete view of organization-specific guidelines and protocols for each drug in the formulary, along with required pharmacy forms. Further sub-formularies are available for specialty areas such as health centers and intensive care units.

## Avoiding errors, saving lives and money

The new, integrated Micromedex with Watson healthcare information system and custom-designed drug formulary will be available to 350 hospitals and more than 2,000 primary health centers, with thousands of concurrent users daily. The formulary covers 3,700 drugs and offers sub-formularies for specialty providers.

The mobile apps, co-created by Al Shehail and the client, enable users throughout the system to access the Micromedex database and formulary on- or offline. Designed for ease-of-use, the app includes organization-specific guidelines and protocols to assist healthcare professionals at point-of-care to improve patient outcomes and reduce adverse events. The app can also be used to communicate any organization-specific updates or announcements. Having this compendium of information is expected to reduce medical errors due to incorrect prescribing or drug interactions, saving lives, improving care and significantly reducing unnecessary medical costs.

***“IBM Watson Health provides for and assists healthcare professionals with support, diagnoses and patient treatment using AI and cognitive technology by providing the real-time data solutions they need.”***

—Dr. Rao Khan, Managing Director - Medical Division, IBM Business Partner Al-Shehail & Co.Ltd.

The Ask Watson feature most clearly demonstrates the AI and natural language processing capabilities of the Micromedex with Watson solution. System users can ask natural questions in either English or Arabic and receive indexed answers based on their role. The healthcare provider organization expects that this capability will free up its trained data information staff for other purposes, in addition to answering drug questions from providers.

Al-Shehail benefited from the IBM acquisition of the Micromedex offering in 2016 when Truven Health Analytics® joined IBM. According to Dr. Khan, working with IBM means

working with one of the world's largest, most trustworthy technology companies, with a strong reputation in healthcare. He also sees significant advantages to working with Watson Health. “They are providing innovative solutions to address the most pressing healthcare challenges,” he says. “IBM Watson Health provides for and assists healthcare professionals with support, diagnoses and patient treatment using AI technology by providing the real-time data solutions they need.”

Al-Shehail is looking forward to the future and developing more innovative solutions with Watson Health. These may include integration within the health information system (HIS), more patient-specific offerings and other solutions that use the Ask Watson feature.

Other Saudi organizations are showing interest in using a similar, online formulary for their drug prescribing needs. Al-Shehail hopes to work with them to continue building the world-class Saudi healthcare system.

### Solution component

- IBM® Micromedex® with Watson™

### Take the next step

To learn more about the IBM solution featured in this story, please contact your IBM representative or IBM Business Partner.

### About Watson Health

For more than a century, IBM has been creating innovations that matter. And with [Watson Health](#), we are committed to help build smarter health ecosystems. This means working with you to help you achieve simpler processes, better care insights, faster breakthroughs, and improved experiences for people around the world. Our core strengths combined—deep industry expertise in health, data and analytics, actionable insights, and our reputation for trust and security—can enable us to deliver support for our clients. Together with our clients and partners, IBM is putting smart to work. For more information, visit <https://www.ibm.com/watson-health>

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