



The digital health phenomenon is not confined to China. It is happening in many emerging markets which are also experiencing pressing domestic healthcare needs. Innovative solutions for homes, hospitals and doctor's clinics may well leapfrog over so-called more advanced economies and revolutionise healthcare. FILE PHOTO

# China's digital healthcare revolution gaining ground

Mobile penetration, smartphone ubiquity and the Internet are leading the way. BY LOKE WAI CHING AND MANAEN MA

**T**HE healthcare sector in China today is being reshaped by the rapid expansion of China's middle class and the growing purchasing power of its digital native generation. Additionally, a government reform policy, technology trends and rapid consumer adoption are driving the revolution of China's healthcare ecosystem towards the development, integration, and use of digital health and a variety of innovative tools and business models.

A 2015 Deloitte report confirms the undeniable fact that China's healthcare market is huge and is still increasing rapidly. The country's annual expenditure is projected to grow at an average annual rate of 11.8 per cent from 2014, reaching US\$892 billion by 2018.

But even though healthcare spending is huge, not all citizens are actually getting the service they need.

There are two dimensions to this problem – supply shortage and skewed market dynamics. According to a recent report from China's National Health and Family Planning Commission, China has 1.8 physicians and 1.7 nurses per 1,000 people. In comparison, the US has an average of 2.4 physicians and 10.8 nurses per 1,000 people. There is also a disconnect

between the medical attention patients are demanding and the level they truly require. Among China's public hospitals, only 7.6 per cent are full-service tertiary hospitals, but they see 47 per cent of the patients, 27.1 per cent are primary hospitals and community health-care centres and they treat only 6.2 per cent of patients.

The government is attempting to train more medical practitioners, establish a primary care system and encourage the private sector to enter the market. However, filling such gaps will take time. One way to plug some of these gaps is to develop digital health.

China's three Internet giants – Baidu, Alibaba and Tencent – and other tech startups are increasingly getting involved in the healthcare space. With mobile penetration, ubiquity of smartphones and mobile internet, digital health is gradually dominating the limelight in China. More than US\$1.5 billion in venture funding was poured into digital healthcare in China in 2016, from e-commerce to online physician-and-patient communication services to disease management apps. Signs indicate that this figure will continue to grow.

Examples of healthcare services being offered by tech companies may be as simple as providing support to take some pressure off

the existing healthcare services provided by hospitals and clinics. For instance, patients can use an online diagnostic service such as Ping An Good Doctor (which raised US\$500 million in 2016) to diagnose and understand simple, uncomplicated ailments instead of overburdening already crowded hospitals. For cases that would require a hospital visit, patients can use the appointment booking app such as Guahao (which raised US\$394 million in 2016). Such apps cut the need to physically queue up at insanely early hours, as well as deal with queue-ticket touts. Other notable apps which have achieved high valuations include Chunyu (Spring Rain) and Ali Health (Alibaba's healthcare subsidiary).

Underlying these innovative digital health services and business models are three trends sweeping China's healthcare system that are also relevant to the rest of the world.

## Trend No 1: New generation of health consumers

The millennial health consumers usually do not behave like common "patients" within the traditional healthcare system. They are willing to try new options – from looking for information online to seeking guidance from experts – and they make decisions independently. The online tools and mobile applications available in China are targeted at this segment of consumers, and can be used to access healthcare services providers and also compare quality and cost of treatment op-

tions. With these possibilities, digital health is therefore able to satisfy where the traditional healthcare system is failing, such as services that involve personal health management, outpatient self-diagnosis, rehabilitation assistance, post-diagnosis patient monitoring and more.

In addition, the current trend of "self-tracking" and "quantified self-movement" – where individuals track behavioural and activity levels through wearable technologies such as accelerometers for personal and fitness – suggests that consumers will ultimately expect personalised and real-time access to health information and advice, driving further technology development geared towards personal health improvement.

## Trend No 2: Boundaries are blurring

Healthcare sector players need to learn to partner with innovators beyond their boundaries, even as boundaries between industries are blurring. The platforms that have already been developed for online retail, technology and telecommunications are providing instructive models and partnership opportunities as they begin to enter the healthcare space. Moreover, consumers who have experienced digital disruption elsewhere will eventually bring their heightened expectation to healthcare. Healthcare organisations should pay closer attention to consumers' digital expectations, and understand them better through data analytics so as to develop personalised, data-rich, omni-channel experiences.

## Trend No 3: The AI way

This healthcare digital revolution will not only change how doctors and patients interact. With the application of artificial intelligence (AI) to the vast quantity of data available, healthcare will improve and be refined in previously unforeseen ways:

- Design treatment: AI-enabled treatment plans will provide clinicians, for example oncologists, evidence-based treatment options by analysing the meaning and context of structured and unstructured data in clinical notes, combined with clinical expertise, external research and data.

- Assist repetitive jobs: AI allows for deep learning through a vast storage of medical data that results in advanced diagnostics being able to handle a broad spectrum of diseases and multiple imaging modalities (X-rays, CT scans, etc). Radiologists in the future should only look at the most complicated films, where human interpretation is useful.

- Drug development: AI enables pharmaceutical researchers and manufacturers to seek out therapies from a database of molecular structures to predict a new drug's effectiveness. This analysis, which typically takes months or years, can now be completed in less than a day. With faster reaction time, we can use newly-developed drugs to fight the next deadly viral epidemic such as Ebola. This could represent tens of thousands of lives saved.

The digital health phenomenon is not confined to China. It is happening in many emerging markets which are also experiencing pressing domestic healthcare needs. These innovative solutions for homes, hospitals and doctor's clinics may well leapfrog over so-called more advanced economies and revolutionise healthcare as we know it.

■ The writers are, respectively, healthcare sector leader for Deloitte South-east Asia and a Singapore Management University MBA candidate.