

DIGITAL DOCTOR

China's health care system faces many unique challenges due to the country's size and population, and digitalization is revolutionizing the industry

By Mark Andrews

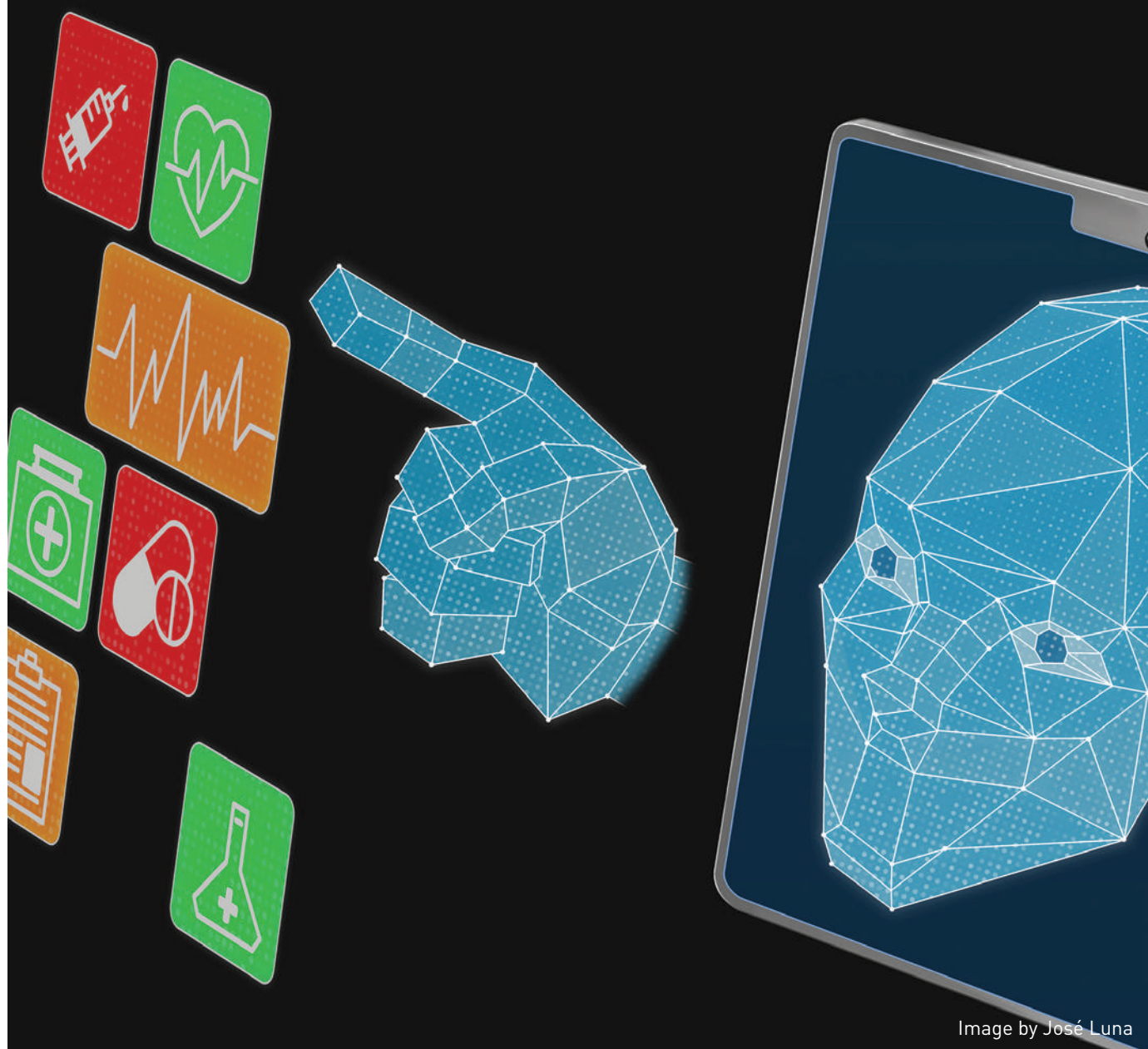


Image by José Luna

Digital hospitals and remote appointments are becoming the norm in China's health care system

When Shanghai-based office worker Kevin Wang started experiencing sleeping problems, he instinctively reached for his phone and input his symptoms into the WeDoctor app. “It offered a detailed lists of hospitals, doctors and available visiting times the moment I input my symptoms, and I could select the [right] doctor to visit at a time convenient to me,” explains Wang. “It was so much more convenient than going to a hospital first.”

China's health care system has become increasingly digitalized over the last few years, a transition that was accelerated by the COVID-19 pandemic. There is now widespread use of remote consultations, AI-based medical research and diagnosis and digitalized patient records, among other things, which are pushing China's health care system into higher levels of efficiency in spite of the fact that the system is still overburdened.

For those unfamiliar with the situation on the ground, public hospitals in China tend to be chaotic and a visit involves navigating from window to window to window for payment, stamps and registration. It is not uncommon for other people to crowd into the consultation room while the doctor tries to examine you. Patient diagnosis time in China averaged only eight minutes in 2019, only a fraction of the three hours that visitors to hospitals spent on each trip. In contrast, medical visits in the US include an average of 16 minutes face-to-face time between patients and doctors.

The size of China's population, along with the rising expectations of the growing middle class for effective health care, make digitalization of health care services in China imperative. “The development of digital health care in China is extremely urgent,” says Xu Wenjing, a pediatrician in Suzhou, west of Shanghai. “And that is mostly because of its large population, high demand for health care and uneven distribution of health care resources, which are concentrated in large hospitals in major cities.”

Appointment with change

Over the last decade, rapid adoption of smartphones and the integration of other

technologies have led to the increasing digitalization of many aspects of people's lives in China, and today the Middle Kingdom is, in many ways, ahead of the West in terms of the digitalization of health care. A selection of different products and services are now available to both health care institutions and individuals, which cater for many health needs at the touch of a button.

At the basic level, companies such as delivery giant Ele.me and JD Health, a subsidiary of massive e-commerce platform JD.com, provide deliveries of medicines ordered by app. Tencent-backed WeDoctor, founded in 2010 as Guahao, offers not only the appointment booking service used by Kevin Wang but an online pharmacy, and cloud-based solutions for hospitals and medical service providers.

There are also new “internet hospitals” springing up across the country. These multifaceted platforms offer online consultations, hospital referrals and appointments, health management and wellness interaction services—typically in conjunction with offline hospitals for needs that can't yet be met digitally. Ping An Good Doctor, backed by Chinese insurance giant Ping An, is one of the largest such “internet hospitals” and now has 400 million registered users.

Apps which allow remote appointments and advice are obviously appealing. When Beijing resident Daisy Dai became pregnant, she decided to sign up for the Good Doctor app for her routine check-ups, rather than a hospital-based doctor. “During pregnancy you feel a little bit here and there,” says Dai. “Hospitals are crowded and it's not so easy to move. I paid about RMB 500 for a year and got my own doctor, who had all my records and could give me suggestions. A lot of the time it's just about being comforted.”

Much of this drive to digitalize health care is driven by the big tech firms. Alibaba has its product AliHealth, which works alongside 3,000 public and private medical institutions, while JD.com's JD Health Internet Hospital has over 130,000 doctors and medical experts on its platform.

Medical institutions have also seen

a wave of digitalization, and especially so during the pandemic. In Wuhan, the epicenter of the outbreak, robots—provided by companies such as Beijing-based CloudMinds—manned wards in the crowded hospitals, disinfecting surfaces, taking patient temperatures, offering risk-free contact with doctors and providing prescribed medicine.

And the developments do not stop there. Across China, companies are developing AI models that can more effectively diagnose multiple diseases, including cancer.

But there is another consideration in the case of China's health care system. Unlike many parts of the world, China uses a combination of two distinct approaches to health care, with many modern medicinal diagnoses and treatments accompanied by complementary cures from Traditional Chinese Medicine (TCM).

In general, it seems that TCM is largely being left behind by digitalization, particularly due to the previously unquantifiable nature of many of the concepts it uses. Additionally, there was pushback from doctors who feared that digitalization could pose a threat to their authority. But progress has been made on the issues, with companies like Jinmu Health offering technology that can be used as a diagnostic aide.

"I think we're at the forefront of digital TCM," says Lawrence Li, CEO of Jinmu Health. "The technology we developed can quantify the vaguer things that make up TCM—including *yin* and *yang* deficiencies and *qi*. A lot of TCM doctors have realized that the product is complementary to their practice, so we've seen them using our stuff to reach more patients, to serve them better through online platforms and to bring the doctors more income."

A system diagnostic

China's national budget for health care amounts to just over 6% of the country's GDP, compared to 9.6% for the EU and 17.7% for the US through its medicare and insurance programs. But the fees that are paid, per person, either by patients or through insurance companies to cover medical expenses average only \$737 in

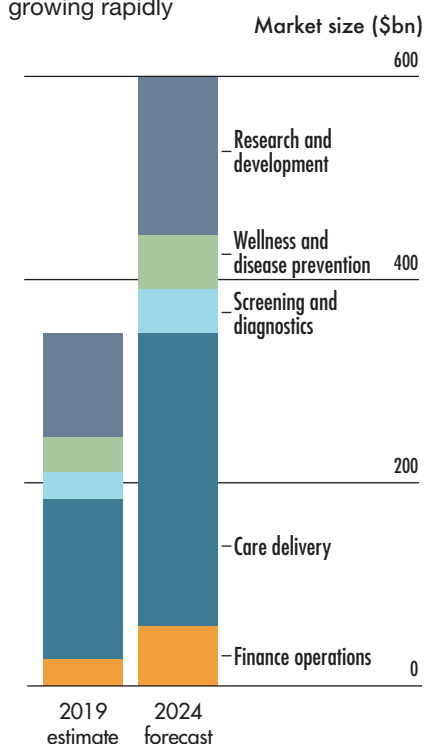
China compared to \$11,582 in the US.

Despite being almost completely state-owned and run, the health care system is accessed on a mostly transactional basis. Patients pay for their treatment upfront and then claim back the fees via insurance—over 95% of people are covered by the public health insurance system. The result, certainly in China's main cities, is comparable health care for a fraction of the price.

But the system faces some interesting geographical and demographic issues. The best health care resources are concentrated in large cities particularly on the eastern seaboard, 72% of third-level grade-A hospitals were concentrated in this area in 2018 and while such hospitals only made up 8% of the total in China, they serviced 52% of the total outpatient visits in 2019. Additionally, China has a rapidly aging population—in 2020 12% of the population were over 65 years old—that is placing increasing strain on the already lopsided system.

HEALTHY GROWTH

The global digital health care market is growing rapidly



Source: McKinsey

In a sense, digitalization is democratizing health care in China, helping the underserved get access to good quality health care. "Using digital technologies like remote sensing, 5G, and AI, diagnosis and treatment data can be transmitted between different locations in real time via virtual platforms," says Jens Ewert, Deloitte China Life Science & Health Care Industry Leader. "This allows medical practitioners in big hospitals to provide rapid assistance to rural doctors, making up for inexperienced technical personnel and improving diagnosis and treatment in the countryside."

Digitalization comparison

The COVID-19 pandemic has provided new impetus for the adoption of digitalization in the Chinese health care system. In February of 2020, at the height of the pandemic in China, 65 new telemedicine platforms were created in Chinese hospitals, and there was a seventeen-fold year-on-year increase in the number of online consultations in the first quarter of the year. WeDoctor alone, claims to have handled 97% of chronic medicine needs in Wuhan at the height of the pandemic.

"COVID-19 further sped up the utilization of digitalized health care service for people who are restricted from visiting hospitals unless absolute necessary," says Kevin Zhou, Chief Health Officer at AXA TP. "The whole industry has seen decreased outpatient utilization and [reduced] medical costs."

Jens Ewert agrees. "Driven by advances in technology and the COVID-19 pandemic, digital health care grew rapidly in China in 2020 and continued to surge in 2021 on continuous innovation and service upgrades," he says. "As a result, hospitals and companies, almost without exception, are now using digital channels for patient access and many other areas."

China is also in a better position after the pandemic than a lot of other countries. According to data from the Philips Future Health Survey, 96% of the country's respondents recognized the high levels of resilience of the health care system and only about one-third listed the pandemic as an external factor hindering their future

planning ability—compared to the average of 68% across the 14 markets surveyed.

Digitalization of the health and wellness market is projected to grow to 24% by 2030 from a base of 3.3% in 2019 with online retail pharmacies making up the largest part of the market—they constituted 48% of digitalized health care services in 2019.

The China advantage

The mobility limitations brought on by the pandemic have also provided the impetus to move online, and when matched with the existing digital infrastructure in China there is a perfect storm for digitalization. “Chinese citizens are very connected and open to technology,” says Allison Malmsten, China market analyst at Daxue Consulting. “So the user base is very easy to convert to digital.”

Data is key to digitalization especially in the post-COVID world. “In every country there has been a COVID-based argument that we need more data about what we’re doing,” says Nick Couldry, author of *The Costs of Connection*, and a professor at LSE. “So health is probably one of the most favorable cases for universal data extraction.”

China’s digitalized nature is unlike that of any other country. Consumer data is abundant due to the interconnection of

apps, mobile phones and banks, among other things. The ability to properly harness this data could catapult China’s already advanced health care system into unrivaled levels of digitalization.

As with most markets in China, the major players in the digitalization of health care are largely the big tech companies which have been the target of Beijing’s recent crackdowns—which are particularly focused on the use and storage of data—highlighting data as the double-edged sword that it is.

“Health data is the most personal information there can be about you, your genetic code is the unique description that makes up your body and mine,” says Couldry. “Those in possession can know everything important about you from a physical point of view and some philosophers argue that it should absolutely not be permissible to be owned by anyone.”

Estonia, which has had a digital health care data system for 13 years, now stores 99% of all health data digitally. Paramount to their e-Health Record system is blockchain technology which gives the patient ownership of the data and they have to give consent for anyone else to view it, and can block elements of it such as a diagnosis from one doctor if seeking a second opinion.

China’s centralized nature can obviously be an advantage with the collation and storage of data. “There will always be a sensitive point here, that the personal medical data of citizens should not be controlled by private companies,” says Li. “Now China has also issued a data security law, so in the future, it is possible that the state or state-owned enterprises will play an increasingly important role.”

A centralized system with data on the citizens would also allow for increased prevention of diseases and further medical science. “Metrics like heartbeat, blood sugar level, body fat percentage, etc., are very important in understanding trends to make diagnosis,” says Malmsten. “China is in a position to use its massive amount of data in combination with AI and machine learning to teach us a ton about the human body.” Furthering that ability is the sheer size of the population, giving those with access to it large amounts of data.

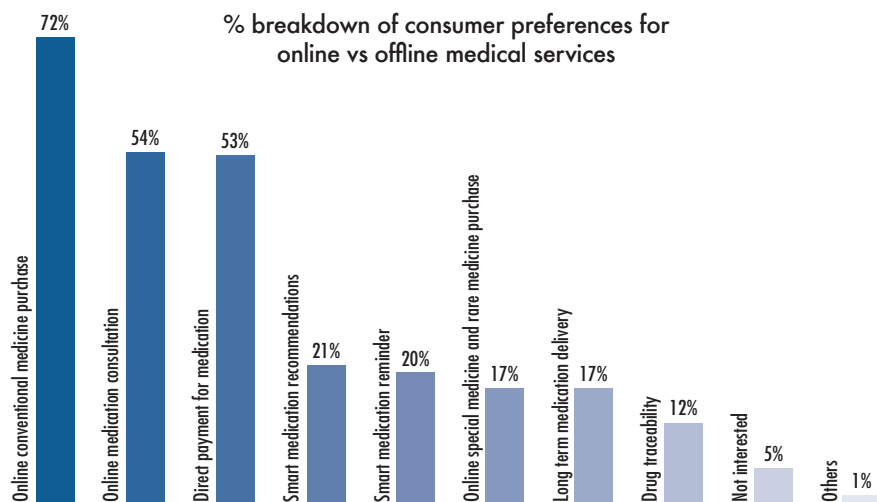
Antibodies

But there are problems with some of the health care apps, and some patients are at risk of over-relying on them and being misdiagnosed. While Daisy Dai was very happy with Good Doctor, she also used a free service from an insurance group but described it as a “waste of time and annoying,” due to its slow speed and non-committal answers culminating in advising her to see a doctor in a hospital. The apps can also be fiddly and elderly patients may struggle to use them. Generally, the main users of such apps are people under 35, despite the elderly being some of the biggest recipients of health care.

Additionally, insurance company participation in the digital health care market raises an ethical issue about data usage. Medical records could greatly impact upon a company’s willingness to provide certain types of insurance cover. On the other hand, they can also benefit from decreased health care costs. But there are obvious issues in terms of data privacy. “Digitalization of health care drives the cost down, hence insurance companies like Ping’an are investing time and money into creating telemedicine apps as they also

WHAT CONSUMERS WANT

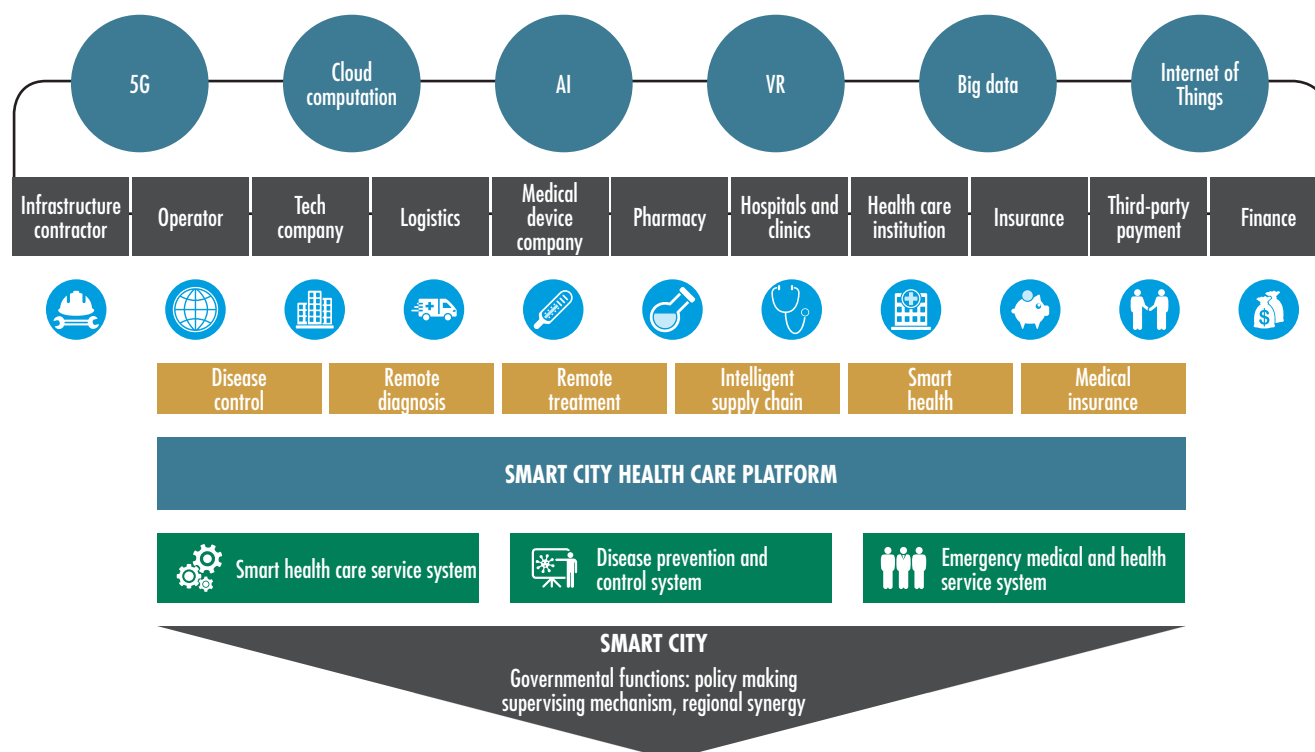
Almost three-quarters of Chinese consumers prefer to buy conventional medicines online



Sources: Deloitte

FUTURE HOSPITALS

A combination of different technologies will form the digital/physical hybrid hospitals of the future



Sources: Deloitte China

benefit from lower health care costs,” says Malmsten.

Then there is the question of access. Online doctor consultations can provide patients with the ability to access top doctors thousands of kilometers away, avoiding expensive travel. And increasingly in the future, it might be possible to do remote operations using robots; Huawei undertook the world’s first 5G remote surgery this year.

It is also not guaranteed that hospitals, especially those in rural areas, can afford to digitalize their patient data, and even if they could, a lack of standardization across systems in the country means that partnerships with other institutions might not be made any easier.

“For a hospital to establish a complete information system requires a large amount of money, for economically underdeveloped areas, if there is no government funding, it is difficult to do,” says Xu Wenjing. “And the core content of medical information technology is electronic medical records,

but so far, there is no global unified electronic medical record standard system, each place and every hospital is different, so networking and sharing of medical records is hard.”

There are also issues with misdiagnosis and incorrectly prescribed medicines. Online consultations can ignore symptoms that can only be diagnosed in person and when it comes to getting medicine, many online pharmacies are not strict. “There was a case not long ago in which a person was diagnosed with hemiplegia,” says Li. “In fact, he did not have this, it was because he had taken medicine. I have ordered medicine on Meituan, and if you say you have a disease, then they agree.”

Healing patient

Many factors are driving the need for digitalization in China and the country is well-positioned to quickly advance, especially compared to others that lack such ubiquitous data availability. And, if China wants to do something, it can often just get

it done.

“As long as the Chinese government wants to do something, it is easy to implement a model,” says Lawrence Li. “So as long as there is robust technology and quality products, I think it will happen quickly.”

But despite continued growth, it is unlikely that, at least in the short term, digital health care will entirely replace some of the face-to-face interactions that health care involves.

“It will continue to grow strong, like the adoption of digitalization in any other industry,” says Kevin Zhou. “But given that health care is so very personal and requires customized, complicated, solutions, it will only supplement the existing model and not totally replace it.”

But that won’t stop China becoming a global leader, says Jens Ewert. “China’s already rapid digitalization of health care will allow it to quickly rise up the value chain, eventually becoming a global leader in the sector.”