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The Next Normal

# The future of
# hospital care:
# A better patient
# experience

Around the world, populations are getting older, and their health needs are becoming more complex. At the same time, technological advances are changing healthcare delivery. In this edition, *The Next Normal* explores how hospitals will innovate in the coming decade—and what it will mean for both patients and healthcare professionals.

**In this issue**

# Hospital care in 2030

In this video, three McKinsey partners describe how hospital visits and hospital stays might change in the next decade.

## The patient experience

**Natasha Stern:** One big change in experience will be that for many things that we go to a hospital for at the moment, we will not go to a hospital. We will instead just do it remotely, or we might go somewhere else that is not the big, huge building in the middle of town.

**Penny Dash:** Far more care will be delivered through a video consultation. Far more will be delivered by you entering your vital signs. It'll be very easy just to drop a little bit of blood onto a little adaptor that connects to your iPhone, and the phone will read the blood test. It will automatically do your blood pressure when you put your hand on the phone. It will automatically take your temperature.

## Going to the hospital

**Penny Dash:** First of all, you'll make your booking online—the same as you might do for an airplane flight at the moment, the same as you might do if you were going to the theater.

**Natasha Stern:** I have this picture of a waiting room outside an outpatient department in an eye hospital. And there's lots of chairs. And that's the very first thing that I'm sure we will eliminate. We will be able to schedule those people that do need to come so that they turn up at the time at which they will be seen—a little bit closer to "one in, one out" than what you see with these huge waiting areas.

**Bo Chen:** There will be a lot of interactions between the patients and the artificial-intelligence-enabled programs. It can be happening through the mobile phone or mobile device that tells you where you need to go, who the physician is you need to visit, and what's the next stop. It could also be through some of the screens mounted on the walls. They will sense and recognize a particular patient, so when they come near, there will be a customized message.

## Staying at the hospital

**Bo Chen:** I would imagine that, in the future, the color of the walls or decorations could be customized digitally, right? It could be customized based on the preference of different families, and then it could be customized based on the critical scenarios. Sometimes you want to be happier. Sometimes you just want to be more peaceful. Sometimes you want to be excited about certain things. And then these environments, maybe, can be customized.

**Penny Dash:** When you then turn up in the operating theater, the chances are that the surgeon may be a robot. Now, that's a little bit of a scary concept. But I think increasingly—and probably by 2030—hands will be seen as illegal instruments. We will think it's weird to put big, clumsy, often not particularly hygienic fingers inside the human body. I think we'll go, "Ew. Weird idea." The robot will do it in a much more precise way, which will mean far less damage to surrounding tissues, far less invasive surgery, and significantly shorter lengths of stay in hospital.

**Bo Chen:** Virtual reality and some other technologies can help bring family members on site and vice versa. As your loved ones are experiencing difficult times, you can sort of see them rather than texting them or anxiously waiting outside without knowing what's going on.

**Natasha Stern:** I think that if we do look forward ten years or so, in many, many countries around the world, we will be able to go home [from the hospital] much faster. There's one place that famously puts people into jeans—no hospital gowns. And just the perception that the patient has of, "This means I'm myself, and I can do the things that I used to do before the procedure was done," makes a really big difference. That's an example that doesn't take ten years. What might take ten years is for it to be adopted routinely in more and more hospitals.

## Tomorrow's healthcare professionals

**Penny Dash:** What would the surgeon of 2030 look like? Well, my sense is that she will be somebody who is very good at using digital technologies. Perhaps she has actually done a first degree in robotics—rather than necessarily trained first in medicine—and certainly will have gone and explored how robotics is being used in other industries, whether it's in car manufacturing or in grocery stores and so on. Those things will be more important than an ability to essentially do fine-motor movements with one's hands.

**Bo Chen:** As early as in medical school, we should start teaching about digitalization in the hospital space. We should teach about the IT systems and how physicians can play an important part in optimizing the system and optimizing the processes and recognizing the value of technology in medical care.

**Bo Chen** is a partner in McKinsey's Beijing office; **Penny Dash** is a senior partner in the London office, where **Natasha Stern** is a partner.

Watch this and other *The Next Normal* videos on McKinsey.com.

# Providing care in nonhospital settings

The CEO of a regional health network foresees more care being delivered outside the hospital—for example, in clinics and in patients' homes.

**As president and CEO** of Froedtert Health, a Milwaukee-based regional health network, Catherine Jacobson is responsible for five hospitals—including a nationally ranked academic medical center—and nearly 40 health centers and clinics. The following is an edited excerpt from remarks she delivered during an interview at McKinsey's Healthcare Conference held in Chicago in June 2019.

## Audio transcript

Our academic medical centers are full—almost 99 percent full. When you are [that full], though, you have immense motivation to get patients out of the hospital. So we have been very, very thoughtful and intentional—working in population health, working in risk-based scenarios— about moving patients from first inpatient to outpatient [care], and then outpatient [care] to clinics, and then clinics to home.

I think what you're going to see in the future of academic medical centers is a trend toward aggregation around specialists. And we are starting to demonstrate the value of that: because we [already] do more of it than anybody else, we can do it better—[achieve] better outcomes and at less cost. At the same time, we have to be very, very diligent about moving out [of the hospital] the things that don't belong there.

We treat over 90 percent of the sickle-cell patients in the state of Wisconsin because we are the urban academic medical center where that [population] is congregated. About six or seven years ago, we opened an outpatient sickle-cell clinic and dramatically reduced inpatient readmissions and emergency-room visits—and saved a lot of money for the Medicaid program in the state of Wisconsin.

We run a 24/7 cancer clinic so that cancer patients can go to a clinic if they're having an emergency, with the clinicians who know them and the nurse practitioners who know them. And they don't have to go to the emergency room; they don't have to get admitted.

So I think that you will see more of that. Even as we aggregate more of the things we do, there are many opportunities for us to take the patient populations that we see and move them to a lower-cost setting.

Listen to the full podcast, "The role of academic-based health systems," recorded in June 2019 at McKinsey's 12th Annual Healthcare Conference, on McKinsey.com.

# 'Test and listen': Microsoft's Jim Weinstein on healthcare tech

In this podcast excerpt, Microsoft Healthcare's head of innovation shares his thoughts on what technology can and can't do in the healthcare space.

In light of his years of experience as a doctor and a leader of a health system, it's perhaps not surprising that Jim Weinstein has a tempered enthusiasm when it comes to healthcare technology. He is excited about its promises yet clear-eyed about its pitfalls. Weinstein is senior vice president and head of innovation and health equity for Microsoft Healthcare. Prior to joining Microsoft in 2018, he was president and CEO of regional health system Dartmouth-Hitchcock Health, which serves a population of almost two million in the northeastern United States. A respected spine surgeon, he is credited with developing the classification system for treatment of spine cancers. He is a coauthor of the book *Unraveled: Prescriptions to Repair a Broken Health Care System* (CreateSpace Independent Publishing Platform, February 2016).

Weinstein recently spoke with McKinsey's Pooja Kumar as a guest on the *McKinsey on Healthcare* podcast. An edited excerpt of the conversation follows.

**McKinsey:** How do you see the next few years shaping up for Microsoft and other tech players that want to make a difference in achieving greater healthcare productivity? Do you see technology companies as natural partners to healthcare systems and other stakeholders?

**Jim Weinstein:** Microsoft certainly wants to be a partner. We're doing interesting things all around the world—like bringing medical supplies and technology to communities where there are

no hospitals, or bringing healthcare to rural areas through remote technology—and we're very interested in helping the workforce become both more efficient and more effective. I'm excited about some of the product lines that Microsoft has announced that I think will truly help improve the physician–patient encounter.

An example is EmpowerMD, which uses natural-language processing so that the doctor doesn't have to sit there typing notes on his computer with his back to the patient, not looking at the patient.[1] These types of solutions will help revolutionize the interchange between the physician and the patient.

Another example is our health bot. Chatbots can be helpful on the administrative side of a hospital. If a patient is calling in to ask questions, you can probably set up a chatbot to deal with a lot of that effectively.

But I also would be cautious about how fast these things will happen. As I well know—both as a physician and as somebody who led a health system—doctors can be very slow to adopt new things, despite how wonderful those new things might be. At Microsoft, we're conscious of that, so our way of rolling things out is that we test, we listen, then we test some more, and listen some more. We try to create partnerships with both traditional and nontraditional players—such as tech companies and retail stores—to achieve that transformation without overwhelming a system with new technologies.

As for the notion that technology is going to help doctors and hospitals save time, I'm not sure. I'm just not sure yet because I haven't seen it. I think we have to be careful not to overpromise. Technology is interesting, but we have to be careful about how it misses some of the largest parts of the population. We need to be sensitive to solutions for all, not just for some. Microsoft, like other companies, has done tremendous work with using artificial intelligence (AI) for retinal eye examinations, especially in India, where we've been looking for diabetic retinopathy among hundreds of thousands of patients. We then could train an AI model, an algorithm, to read images from eye exams with AUC (area under the curve) numbers better than a human can read them. But what if the patient is an African-American female and the AI model didn't account for that? We could end up overdiagnosing or underdiagnosing in exponentially greater numbers than we are now.

Not everything is an AI problem. And there are risks in AI; people can corrupt networks, and you, as a human, might not perceive it. So, yes, I'm excited about the future and the possibilities of technology, but I think a word of caution is in order.

**McKinsey:** Do you see technology and automation taking over administrative tasks, especially in light of the waste that we know is inherent in the healthcare system?

**Jim Weinstein:** Many things could be done in an automated way. People are fearful about tech [taking away jobs] but I think it will be the opposite. Let's use radiology as an example. What is a future radiologist's work going to be? If a chest X-ray can be read better by a machine, we don't

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[1] According to Microsoft.com, Microsoft partnered with Nuance Communications, a provider of conversational AI technologies, in October 2019 to develop solutions that "power the exam room of the future, where clinical documentation writes itself" through the use of ambient clinical intelligence.

need to have somebody sit there all day reading chest X-rays. A machine will read most of these "normal" images, so we don't need as many radiologists to read those. But we do need radiologists to do quality checks on certain images to make sure that there's agreement, validity, and safety, with total accountability. Might we use such tools and information to define high quality, and as a way to improve the training of future radiologists?

We have to start training people differently for a different workforce future. But we're not designed as a system, as a country, to do that. It's going to take a unique medical school and unique community that says [to technology companies], "We're going to start thinking about the future together."

**Pooja Kumar,** a partner in McKinsey's Boston office, conducted this interview.

[Listen to the full episode of this *McKinsey on Healthcare* podcast on McKinsey.com.](#)

December 2019 | Interview

# How technology can improve the patient experience: A view from Tencent's Alex Ng

Alexander Ng, vice president of Tencent Healthcare, shares his vision for hospital care in 2030.

More than a billion people are active users of the WeChat app. The mobile platform, launched by tech giant Tencent in 2011, allows users to send messages, make payments, play games, and do many other things—including, increasingly, take care of their health. WeChat offers a growing range of healthcare-related services: users can now book medical appointments, pay hospital bills, purchase over-the-counter medicines, and consult with doctors via chat. Tencent's digital platform gives patients access to the network of more than 38,000 healthcare providers who have opened WeChat Official Accounts.

And the company is continuing to explore new ventures within the healthcare space. For example, Tencent is investing in dozens of medical start-ups; it is also collaborating with hospitals to develop diagnostic imaging solutions powered by artificial intelligence (AI).

Alexander Ng, vice president of Tencent Healthcare and a physician himself, is one of the leaders charged with expanding Tencent's presence in the healthcare arena. Ng recently spoke with McKinsey's Bo Chen and Monica Toriello about what lies ahead in hospital care—both in China and around the world—and the role that technology companies can play in improving the patient experience.

# Alexander Ng biography

***Vital statistics***
Born in 1979 in Hong Kong
Married, with 2 children

***Education***
Holds an MPH degree from the Harvard University School of Public Health, 2 medical degrees from the University of Auckland, and a postgraduate diploma in health informatics from the University of Otago

***Career highlights***
Tencent Healthcare
(July 2019—present)
Vice president

Bill & Melinda Gates Foundation
(2015—19)
Deputy director of China program, head of health and innovation

McKinsey & Company
(2006—15)
Associate partner

Counties Manukau District Health Board
(2004—05)
Chief resident of Middlemore Hospital

***Fast facts***
Has been an honorary associate professor at the University of Hong Kong since 2011

Is a member of the Hong Kong Council on Smoking and Health

**McKinsey:** As both a doctor and a tech executive, you have a highly informed perspective about the future of healthcare technology. How do you think the patient experience in hospitals in 2030 will differ from the patient experience today?

**Alex Ng:** I think technology will have an impact on every part of the patient journey. In 2030, I believe there will be interconnected, transparent medical records that will be available to the people who need to see those records in the setting where they need to see them. So if you call an ambulance, both the ambulance driver and the receiving hospital will already have a very clear idea of who you are as a patient—your medical history and your medical needs—even while you're still en route to the hospital. It's not just that your electronic medical record (EMR) will be available online; it's that, with AI, the EMR will be tailored and curated to the setting, which will result in faster and more accurate care. For example, in an ambulance, what the ambulance worker really cares about is whether the patient has a medicine allergy, is on certain medications, or has a medical condition that will require immediate critical care.

The receiving hospital will also get that information. And the hospital will have the technology to track the exact location of the ambulance and its estimated time of arrival, as well as the flow of resources within the hospital: which doctors are where, which nurses are where, and are they busy or not? This will allow the hospital to mobilize the right people to the right location.

Another part of the experience that will change in 2030 is doctor–patient engagement. Today's technological advances are different from the computerization of the healthcare system in the 1990s, which drew doctors away from patients and toward computer screens. The next level

# "The next level of digitalization will not be tied to a fixed infrastructure, so it will relieve doctors of the need to be stuck to the screen."

of digitalization will not be tied to a fixed infrastructure, so it will relieve doctors of the need to be stuck to the screen. It will free up their time so that they can engage with the patient. For example, a doctor will wear a small microphone during conversations with the patient, and the history taking will be recorded. Natural-language-processing models tailored to the doctor's style will pick up the important keywords, and the history will be structured into a data schema that can be used in the back end and in the EMR. In the future, AI models will capture and immediately structure the data—it won't be the free text that we see in EMRs today.

Then, if the doctor prescribes a simple drug treatment, EMRs and technology will be able to prevent overuse or misuse of drugs, or side effects due to drug–drug interaction. If a patient needs to be admitted, technological tracking will allow for better flow management so that patients can be moved in and out of the right beds in the right wards. The hospital staff will have much better oversight on which patients are ready for discharge and when, reducing the likelihood of a patient having to line up in the corridor, lying on a gurney, while waiting for a bed to be freed up.

Another way that technology will help in the future is that if you need to go into the operating theater for a type of surgery that is not performed often by the local doctors, an expert surgeon in another location can conduct the procedure using robotic surgery and 5G connectivity. These technologies will be game changing—they'll break down the four walls of the hospital by enabling greater access to clinical resources.

**McKinsey:** That's a compelling vision for hospital care in 2030. But will that scenario play out everywhere? Or just in the most developed countries?

**Alex Ng:** The differences won't be on a country-by-country basis, but city-by-city. Some of the technologies we're talking about—5G connectivity, robots—aren't cheap, so they'll only be in places with more financial resources, such as big cities and tech centers.

But I think some things will be universal or popularized. Everybody can have a connected electronic health record, or an AI engine to catch side effects for drug–drug interaction, or AI that helps the physician, the healthcare worker, or even the African village worker determine the best course of action—because the required investment for these things is not that high. All you need is internet connectivity and a mandate, usually at a country level or at a jurisdiction level, to have a centralized health record.

As for releasing medical data to the right people at the right time, I think this is where leapfrogging will happen in countries and in cities where entrenched interests are less of an issue, or where specific hospitals' capital investment in legacy data infrastructure has been relatively lower.

**McKinsey:** What role does Tencent want to play in making health data more widely shareable?

**Alex Ng:** Connectivity is part of Tencent's DNA. We started with consumer-to-consumer connectivity—through messaging platforms like QQ and WeChat—then moved into consumer-to-business connectivity. So the next step is business-to-business connectivity. We are already working with different cities to create a middle layer, so that the hospitals can still have their own information living in their own server while also contributing to a regional health-information system. This is where China is heading, district by district and city by city. Australia and some of the Scandinavian countries have been doing it for many years; what's unique to China is the scale at which it's being deployed.

**McKinsey:** Tencent Healthcare is currently focused on the Chinese market, but what are the company's aspirations outside China?

**Alex Ng:** There's so much to be upgraded within China, so we feel a certain social responsibility to focus on China first. And because healthcare is such a local business, we might not be able to use the same tools and products elsewhere. In the next market that we go to, we'll probably need to relearn and redevelop not just the product itself but also the language that the products use. All our products are in Chinese.

Language definitely won't be a barrier in 2030, though. Language translation will be the least of our worries from a product-development standpoint. The bigger challenge will be to understand the societal context, which will require a combination of technological bandwidth and local knowledge. Tencent is privileged to have the resources and the branding to attract the best scientists and the best technical staff to come and work for us. On the other hand, hospital systems are closest to patients and understand how to deliver care. So, we need to form partnerships. Tencent has the technical expertise but we also need the local context. Our model will most likely be partnerships with local healthcare organizations around the world.

**McKinsey:** When all these new technologies become available, do you think physicians will need to be trained differently?

**Alex Ng:** To be honest, I think the skills that doctors and medical students will need in the future will be "back to the basics": how to engage, communicate, and empathize with a patient. We are focused on specific pathology and diseases but not so much on the social aspects of the patient or the impact of the family situation on the patient's recovery. These are areas in which humans can help us much more than technology can. This is where the training needs to change in the medical curriculum—back to focusing not just on health but on the "care" part of healthcare.

**Bo Chen**, a partner in McKinsey's Beijing office, and **Monica Toriello**, a member of McKinsey Publishing based in New York, conducted this interview.
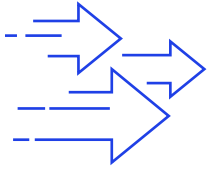
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