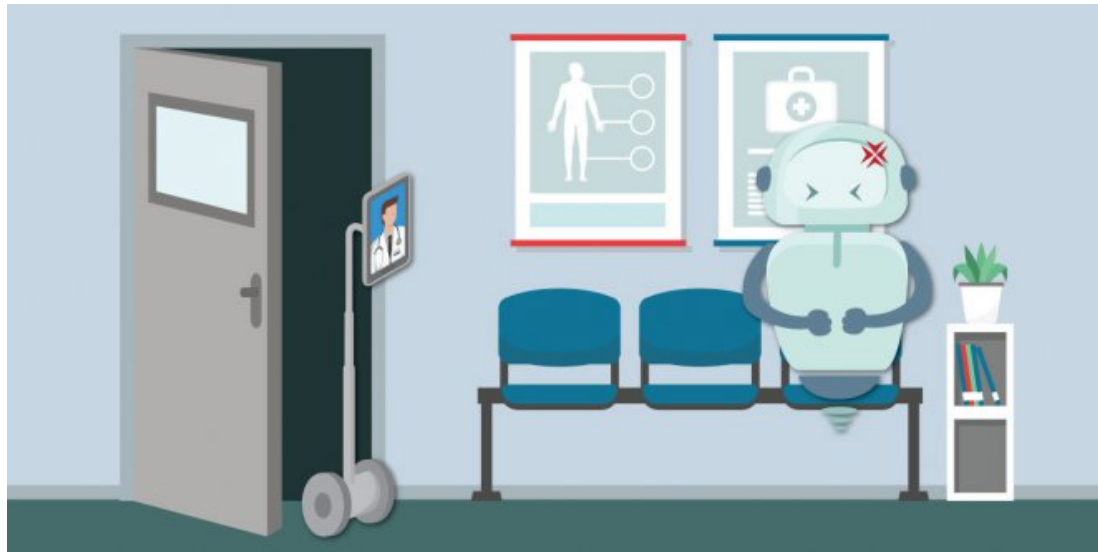


The Doctor Will See You Now



By LORI BELTON

How can we bridge the gap between patient expectations and the complex reality of medical diagnosis? The answer, and the future of healthcare, lies in making self-service work through AI, AR, and video.



Self-Service and Medicine Do Not Mix ... Yet

The first two decades of this century saw an information revolution, thanks to widespread internet access. That, in turn, has led to a self-service revolution.

We use mobile apps to book theatre tickets, check our bank balances, find the best restaurants. Where gatekeepers once stood between us and what we wanted to do, today 2.5 billion smartphone users worldwide can use their devices to make things happen for themselves.

However, the revolution goes only so far. Until now, healthcare has been largely untouched by self-service. And for good reason. It takes ten years to train to become a general practitioner. So, while you don't need to be a banker to understand your bank statement, asking the internet for a medical diagnosis gives accurate results only one in three times.

The answer isn't as simple as encouraging people to stop their attempts to self-diagnose. The genie is out of the bottle, with more than a third of adult Americans using the internet to self-diagnose.

Similarly, increased expectations, expensive therapies, and longer lives have driven higher healthcare costs across the developed world.

If healthcare providers are to meet patient expectations and extract more value from each dollar spent, then we need to make self-service telehealth safer through technology.

The Self-Service Revolution and Digital Healthcare

To understand where and how to introduce more self-service safely, we need first to understand the existing role of self-service in healthcare.

Broadly, there are four types:

- **remote access to healthcare:** virtual appointments with medical professionals
- **digital preventative healthcare:** helping people to avoid developing a condition by delivering healthy living advice
- **technology supported condition management:** helping patients to understand and better manage their condition, through fitness and wellness tools
- **group therapy and support:** helping people with similar conditions to interact and support each other.

Both logistically and therapeutically, each one is complex and highly regulated. For example, chatbots that provide diagnosis are considered to be medical devices, with all the rigour that entails. As you'd expect, this is something that academic medicine has been exploring for some time and there are established frameworks to determine the suitability and maturity of, for example, tools that assist in reaching a diagnosis.

So, with the constraints of money, availability, and geography, access to medical professionals is both scarce and expensive. If part of the problem is that professionals are in greater demand than their availability can supply, how can communication technology help to overcome those constraints and deliver safe, reliable self-service medicine?



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Three Stages of Self-Service Digital Healthcare in the Next Decade

As you'd expect, we at Nexmo, the Vonage API platform, leave medicine to the professionals. However, from our experience with communication technology we believe that telehealth is starting to undergo a transformation in three phases:

1. **Remote access to existing services:** already today patients use video calling, messaging, and secure forums to access existing healthcare services remotely. Whether it's through health insurance in the US or the Royal Flying Doctor Service in the Australian outback, some forms of healthcare are becoming more immediate thanks to cloud communication tech.
2. **Human plus:** human-led services will be augmented with AI capabilities that make human practitioners and participants more effective; we are already seeing the seeds of this.
3. **AI-led:** as AI-based services become more reliable, they will begin to act as the primary point of healthcare for many patients, with human practitioners available for cases not suited to the AI.

Let's be clear: phase three is a long way off. Technical, regulatory, and cultural hurdles likely mean we won't see healthcare led by AI for 25 years or more.

Importantly, none of this means that people will be any less important in the delivery of healthcare. Instead, just as we've seen with past technical innovations, new forms of digital healthcare will free human practitioners to innovate in new areas.

So, what can we expect to see in each of these three phases?

Remote Access to Existing Services

This is the self-service healthcare that we have today.

It's the mobile app that gives you a HIPAA-compliant video call with a medical professional, perhaps running on our own OpenTok video API. It's the access to diagnostic information that, frankly, most of us are ill equipped to use. It's the forum where people living with the same condition can support each other.

This is exciting. It delivers timely healthcare to remote areas and can improve outcomes. Remote access to existing services makes them cheaper to deliver, saves time, and connects people who might never have met.

But it's just the start.

The next part of this phase is to integrate existing healthcare services more deeply into our everyday lives and preferred communication tools. What if you could message your physiotherapist using secure messaging on WhatsApp?

Let's take it a step further. What if you message your physio using WhatsApp but a chatbot replies instead? Maybe you're not so keen. Would you be happier if that reduced your deductible and there was no reduction in the quality of your care? That is human plus.

Human Plus

Augmenting human contact center agents is already a theme in customer communication. In fact, AI in the contact center will mean a world in which the contact center operates as a unified tool, combining human and artificial intelligence to anticipate and serve customer

needs.

For healthcare, human plus means using AI and AR techniques to make human medical professionals more effective.

Imagine that your healthcare provider gives you an app that puts high quality first-line healthcare right on your smartphone. As we've seen, people already try to self-diagnose. With an AI-driven healthcare app, that desire for quick and convenient diagnosis will be safer because the gap between the average person's knowledge and that of a doctor will be bridged.

In our previous piece on telemedicine, we looked at an example where an AI-driven healthcare app was able to examine a photo of a rash and determine the likelihood of it being the result of a dangerous infection, such as meningitis, or something much more benign like poison ivy.

Such apps will triage cases and escalate them to humans where the AI is out of its depth.

Similarly, AI assistants will listen in on patient doctor consultations and provide real-time advice to the doctor in order to make her more effective.

In the human plus world, people remain as the final decision makers for all except the simplest of cases. Video calling, voice calling, SMS, over-the-top messaging, and so on provide channels that enable AI agents to enhance the value of the ongoing conversation between patient, healthcare provider, and other patients where appropriate.

AI-Led

In the Star Trek series Voyager, the ship's doctor was an AI known as the Emergency Medical Hologram (EMH). In the show, the EMH is designed to be a human plus tool. However, the ship's healthcare quickly became AI-led when Voyager found itself transported to a remote part of the galaxy with no hope of bringing a living doctor on board.

Perhaps we'll see a similar progression in real-world healthcare. As people become comfortable with AI-driven healthcare, and technology progresses, perhaps we'll trust AI "medics" more and more. It'll be a gradual shift but one day we might notice that some of our healthcare is AI-led, while deferring to humans as needed.

Future-gazing is a notoriously dangerous sport. Nonetheless, one thing is clear. Whatever role there might be for AI in healthcare in the coming decades, it will need reliable communication infrastructure. That's something that we at Nexmo know a thing or two about.

So, in five, ten, or fifty years it's likely that we'll still hear the phrase, "The doctor will see you now." However, the difference will come in whether patient and practitioner are in the same room and, maybe, even whether both sides of the conversation are entirely human.

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