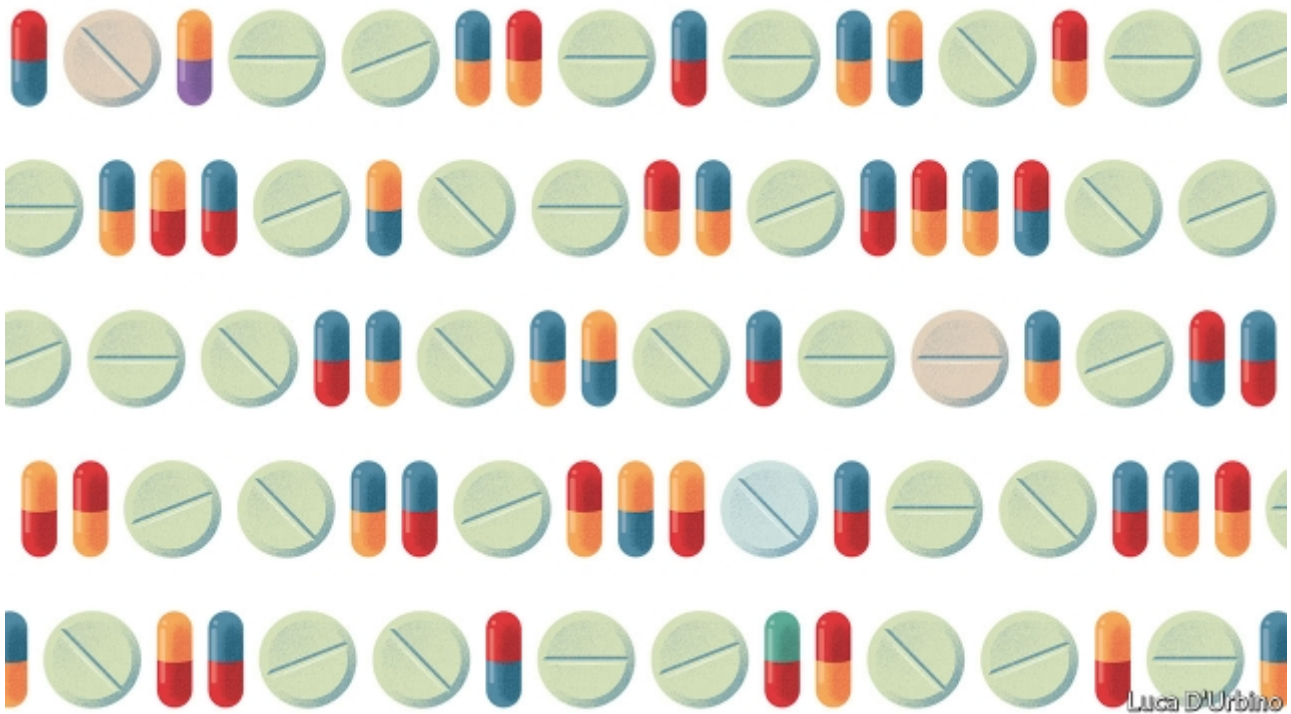


Data and medicine

# A revolution in health care is coming

*Welcome to Doctor You*



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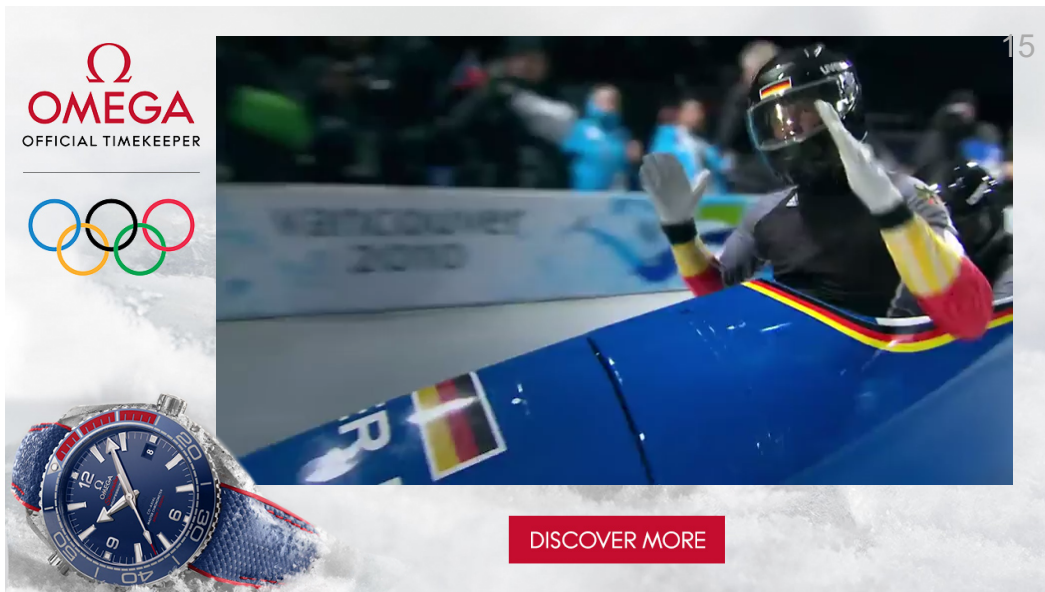
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NO WONDER they are called “patients”. When people enter the health-care systems of rich countries today, they know what they will get: prodding doctors, endless tests, baffling jargon, rising costs and, above all, long waits. Some stoicism will always be needed, because health care is complex and diligence matters. But frustration is boiling over. This week three of the biggest names in American business—Amazon, Berkshire Hathaway and JPMorgan Chase—announced a new venture to provide better, cheaper health care for their employees. A fundamental problem with today’s system is that patients lack knowledge and control. Access to data can bestow both.

The internet already enables patients to seek online consultations when and where it suits them. You can take over-the-counter tests to analyse your blood, sequence your genome and check on the bacteria in your gut. Yet radical change demands a

shift in emphasis, from providers to patients and from doctors to data. That shift is happening. Technologies such as the smartphone allow people to monitor their own health. The possibilities multiply when you add the crucial missing ingredients—access to your own medical records and the ability easily to share information with those you trust. That allows you to reduce inefficiencies in your own treatment and also to provide data to help train medical algorithms. You can enhance your own care and everyone else's, too.

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### The doctor will be you now

Medical data may not seem like the type of kindling to spark a revolution. But the flow of information is likely to bear fruit in several ways. One is better diagnosis. Someone worried about their heart can now buy a watch strap containing a medical-grade monitor that will detect arrhythmias. Apps are vying to see if they

can diagnose everything from skin cancer and concussion to Parkinson's disease.

Research is under way to see whether sweat can be analysed for molecular biomarkers without the need for an invasive blood test. Some think that changes in how quickly a person swipes a phone's touchscreen might signal the onset of cognitive problems.

A second benefit lies in the management of complex diseases. Diabetes apps can change the way patients cope, by monitoring blood-glucose levels and food intake, potentially reducing long-run harm such as blindness and gangrene. Akili Interactive, a startup, plans to seek regulatory approval for a video game designed to stimulate an area of the brain implicated in attention-deficit hyperactivity disorder (see article (<https://www.economist.com/news/business/21736197-smartphones-are-increasingly-delivering-verified-treatments-diabetes-addictions-and-adhd>)).

Patients can also improve the efficiency of their care. Although health records are increasingly electronic, they are often still trapped in silos. Many contain data that machines cannot read. This can lead to delays in treatment, or worse. Many of the 250,000 deaths in America attributable to medical error each year can be traced to poorly co-ordinated care. With data at their fingertips, common standards to enable sharing and a strong incentive to get things right, patients are more likely to spot errors. On January 24th Apple laid out its plans to ask organisations to let patients use their smartphones to download their own medical records (see article (<https://www.economist.com/news/business/21736193-worlds-biggest-tech-firms-see-rich-opportunity-health-care-which-could-mean-empowered>)).

A final benefit of putting patients in charge stems from the generation and aggregation of their data. Artificial intelligence (AI) is already being trained by a unit of Alphabet, Google's parent company, to identify cancerous tissues and retinal damage. As patients' data stream from smartphones and "wearables", they will teach AIs to do ever more. Future AIs could, for instance, provide automated medical diagnosis from a description of your symptoms, spot behavioural traits that suggest you are depressed or identify if you are at special risk of cardiac disease. The aggregation of data will also make it easier for you to find other people with similar diseases and to see how they responded to various treatments.

### **An Apple a day**

As with all new technologies, pitfalls accompany the promise. Hucksters will launch apps that do not work. But with regulators demanding oversight of apps

that present risks to patients, users will harm only their wallets. Not everyone will want to take active control of their own health care; plenty will want the professionals to manage everything. Fine. Data can be pored over by those who are interested, while those who are not can opt to share data automatically with trusted providers.

The benefits of new technologies often flow disproportionately to the rich. Those fears are mitigated by the incentives that employers, governments and insurers have to invest in cost-efficient preventive care for all. Alphabet has recently launched a firm called Cityblock Health, for example, which plans to trawl through patients' data to provide better care for low-income city dwellers, many of them covered by Medicaid, an insurance programme for poorer Americans.

Other risks are harder to deal with. Greater transparency may encourage the hale and hearty not to take out health insurance. They may even make it harder for the unwell to find cover. Regulations can slow that process—by requiring insurers to ignore genetic data, for example—but not stop it. Security is another worry. The more patient data are analysed in the cloud or shared with different firms, the greater the potential threat of hacking or misuse. Almost a quarter of all data breaches in America happen in health care. Health firms should face stringent penalties if they are slapdash about security, but it is naive to expect that breaches will never happen.

Will the benefits of making data more widely available outweigh such risks? The signs are that they will. Plenty of countries are now opening up their medical records, but few have gone as far as Sweden. It aims to give all its citizens electronic access to their medical records by 2020; over a third of Swedes have already set up accounts. Studies show that patients with such access have a better understanding of their illnesses, and that their treatment is more successful. Trials in America and Canada have produced not just happier patients but lower costs, as clinicians fielded fewer inquiries. That should be no surprise. No one has a greater interest in your health than you do. Trust in Doctor You.

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