

The digital revolution in the pharmaceuticals industry

Pharmaceuticals expert Professor Trevor Jones speaks with Inflexion Private Equity about the impact of digitisation in the sector.

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How is digital disrupting the pharmaceuticals industry?

Digitisation is transforming all aspects of the industry, from drug discovery through to dealing with patients in the world they live in rather than in a surgery. The advent of apps and wearable devices, as well as insidables, is giving us insight and data we simply didn't have before.

There are lots of examples of innovations which are helping patients and doctors alike. We've heard of smartphones tracking the steps you take and your sleep patterns, and how these can help users to be healthier. We are seeing the development of more invasive technologies, such as smart tattoos, which measure blood chemistry and its changes, to inform whether a patient's condition is stable or deteriorating.

A massive advance over the last couple of years are tiny transmitters that go inside a tablet. When swallowed by the patient, the tablet disintegrates in the stomach and the transmitter signals that the patient has taken the medicine. It then starts working to detect, for example, whether the patient is walking about, their vital functions. This can be connected with the Internet of Things and can give us 24/7 information on the patient: are they taking their medication regularly? How effective has the medication been?

How will these innovations impact people?

Very positively. It's completely changing the interaction between doctor, the carer, the pharmaceutical company and the patient. Too often in healthcare we see silos of activity: the patient at the GP surgery, at home, at the hospital, in care homes, with pharmaceutical companies seen only as distributors. Now it's possible to provide a seamless connection between these parties.

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This gives the pharmaceuticals industry a chance to provide their unique expertise and knowledge to ensure optimised and cost-effective treatment.

In 10 years' time, this digital revolution may result in very little healthcare being delivered in a GP surgery but rather at home or work. This could be a real benefit to the NHS.



Prof Jones CBE FMedSci FRCP(Hon) is currently a member of the Welsh Government Bevan Commission. He is also chairman of the international clinical research organisation Simbec-Orion, and holds board seats at Arix Bioscience plc, e-Therapeutics and the UK Stem Cell Foundation.

Previously he was a director at Allergan Inc in the US, R&D director of The Wellcome Foundation, and Director General of the Association of the British Pharmaceutical Industry. He has served as a member of the UK's Medicines Commission, advised the Cabinet Office on the Human Genome Project, and was the first winner of the SCRIP Lifetime Achievement award.

Who owns this data and who has access to it?

Confidentiality of data will need tight management. Many people want this information but not all for the right reasons, and this will become a societal challenge. If this information gets into different hands, such as employers, insurance companies or even partners, it could have many consequences and so raises significant moral dilemmas.

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Most computers are currently too small to process much of the data in a meaningful way. Big tech firms like IBM claim to have ushered in the era of cognitive healthcare with their Watson technology, while Google's AI business DeepMind is said to be capable of radically improving healthcare. Revolutions in blockchain technology will determine how and to whom this data is ultimately shared.

Will tech firms and pharmaceuticals merge?

New systems demand that pharmaceutical companies find new ways to work alongside tech companies, healthcare providers, patients and patient organisations. I envisage a dependency emerging between tech companies and pharmaceuticals that will be very helpful.

We're talking about a convergence of technology, convergence of robotics, of social media and the community. It's a really exciting time!

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How technology can improve patient healthcare

There could be significant changes in how we treat individual patients. Imagine, for asthmatics we electronically capture lots of data and information, for example their symptoms, breathing capacity, mobility. In parallel we can store tissue from their lungs in a bio-bank and study their genomes. If we also record such factors as environmental pollution, family and work history and location, we could effectively decide what the likely triggers are – whether pollutants, living in a deprived area, or a specific work pattern – and suggest the most effective medicines or treatments. These informatics provide a way of saying 'we can do this differently and more efficiently and more cost effectively'.

Consider diabetics who have to monitor blood sugars multiple times per day, currently through

a pinprick. Soon they should be able to do this through a fingerprint on an app. If they are injecting Insulin then the syringe can have a Bluetooth connection and be able to tell you electronically how much to inject. If the patient's condition is not stable, then the electronic record can feed this back to a nurse who could ring you and discuss treatment or suggest you come into a clinic for further evaluation.

Tech players such as Apple and Google are very advanced here, but there are also thousands of smaller businesses developing apps, devices and intelligent systems; some can even measure mood...so there are increasingly interesting ways of tracking people's wellbeing and preventing illness before it sets in.

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