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# Healthtech: what's the diagnosis for insurers?

There is no doubt that healthtech applications using machine learning, a subfield of AI, have huge potential to improve healthcare. Wearables and other devices can bring a more preventative emphasis into care and particularly help those with long-term conditions to manage their health.

Take two quick examples to illustrate. Drayson Technologies has developed an app called Edge that works via a mobile tablet and helps patients with Chronic Obstructive Pulmonary Disease (COPD). The patient uses a finger probe daily which reads the oxygen saturation level in their blood and sends the data to the app. The machine learning algorithm under the hood learns what 'good health' for each person looks like. Monitoring this data means that the technology, and more importantly the patient and their care team, can see a possible declining health trajectory and act on this predictive information far sooner. In a 12-month clinical trial, the app reduced hospital admissions by 17 percent and GP visits by 28 percent, easing pressures on the UK's National Health Service (NHS) as a whole.[1]

Babylon Health, meanwhile, offers a paid subscription service, run in collaboration with the NHS, where patients can have a video consultation with a GP at any time, 24/7. They have also developed a mobile phone chatbot that will answer NHS inquiries from more than a million Londoners, and will help triage them to the most appropriate service.[2] Although still in the pilot phase, it's a great example of technology being used in new ways to manage growing health needs.

These are just two out of a myriad of new players establishing themselves. However, there are significant barriers that need to be overcome if healthtech is to take off to its full potential through the industry. Healthcare,

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rightly, is highly regulated and there are higher barriers than perhaps in other industries such as financial services or telecoms.

## Examinations and care required

One of the key issues is **data privacy**. New technology may make far higher levels of data available — but who has the permission to use it and what safeguards are in place? We have already seen data breaches in the exchange of personal data to private organizations, specifically Google's DeepMind.[3]

The other big question is around **accountability and liability** — an issue that is directly applicable to insurers. If an AI algorithm misses a sign of serious illness or makes

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[1] NHS and Drayson Technologies unveil groundbreaking digital health deal, 11 July 2017, pharmaphorum
[2] The NHS is trialling an AI chatbot to answer your medical questions, 5 January 2017, WIRED UK
[3] Royal Free breached UK data law in 1.6m patient deal with Google's DeepMind, 3 Jul 2017, The Guardian

a misdiagnosis, who will be liable for that: the tech developer, the healthcare provider, the individual doctor overseeing the patient's care? Insurers will need more certainty on liability so as to price their commercial insurance agreements with healthcare players.

Beyond these regulatory issues, the other major question that healthtech poses for insurers is what effect it could, or should, have on **how policies are priced** to consumers. Just as in telematics and car insurance, the development of apps and wearables that monitor health signs will provide far richer data on individuals. The potential to adjust premiums per individual is clear. But how ethical will that be? The difference between motoring and health is that if I drive my car carelessly that is my decision, or something within my control. But I don't choose to poorly control my Type 1 diabetes. I cannot, despite trying, predict all the variables that may adversely affect my diabetic control. So if I make the 'wrong decision' on how much insulin I should take, is it fair that my premiums are affected? It is a concern that we could collect data on our health, and then in turn, become penalized by it. We must ensure that the new patterns unearthed by machine learning protect those people in society that find themselves newly categorized and potentially disadvantaged.

Take for example, Facebook has a patent in place — although it has not used it — that would allow creditors to assess your creditworthiness based on the credit ratings of the people in your social network.[4] Could the same idea be developed to apply to health? Analyzing an individual's connections on social media to see if they have links to people with poor health behaviors (e.g. smokers) and pricing accordingly? Would that be ethical?

These are all issues the insurance industry will need to consider carefully.

But the wider use of healthtech could pose other questions too — such as around insurers' **demand forecasting and costing models**. Take breast cancer for example: if machine learning could detect early stage breast cancer earlier, the predicted population health costs for breast cancer, as a whole, would reduce as the cancer is treated and contained, preventing spread. This would thankfully, lead to fewer women requiring aggressive breast cancer treatment. But if treatment regimes are covered by a women's insurance policy, will that leave the insurer in a positive or negative cost/income position?

## Journey forward

One opportunity that healthtech could hold for the insurance industry is to commoditize its data and sell that into health providers or tech developers. Aggregating lifestyle or health information by post code, for example, could provide extremely valuable insights. But again, there will be issues over public trust and user agreements to be managed.

One thing is beyond doubt: the technology is developing at pace and will not stop. Machine learning, and more generally AI, are certain to play an ever greater role in our health systems and services. We need regulation to keep pace and clarify the issues I have discussed.

The insurance industry has much to think about. Healthtech opens up fascinating new possibilities — but also raises questions and risks that the sector must model carefully to map out the path ahead.

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[4] Lenders are dropping plans to judge you by your Facebook friends, 24 February 2016, Fortune

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