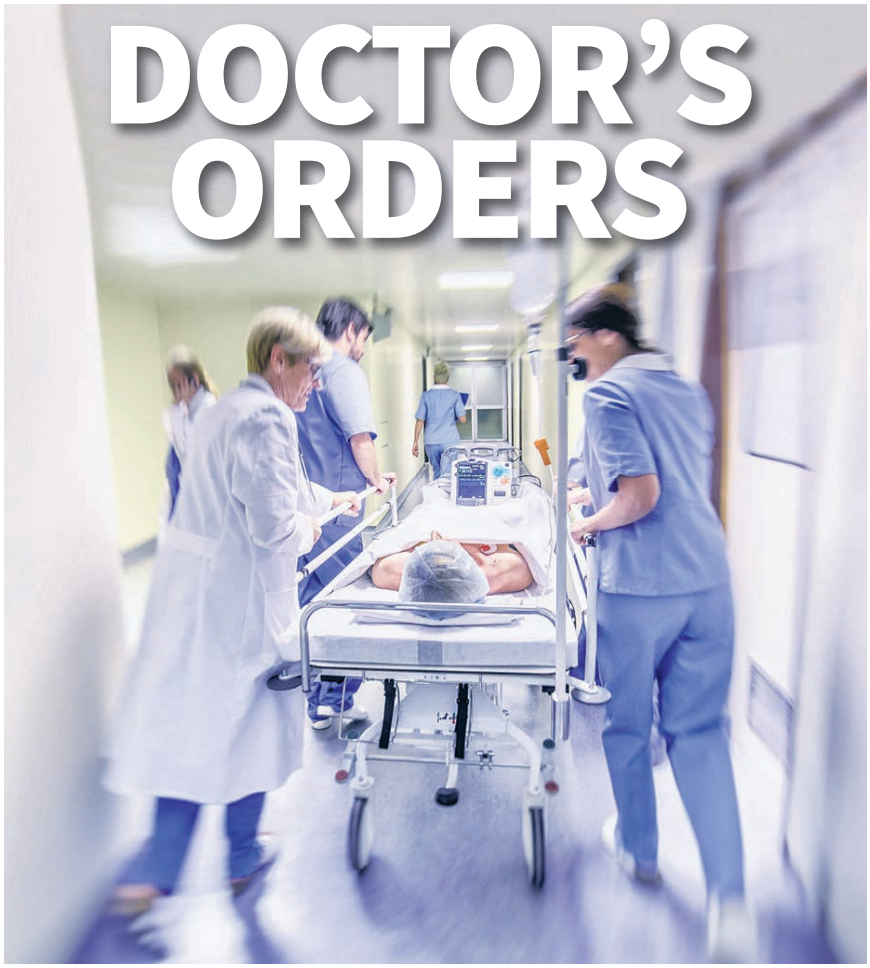
DATA AND BUSINESS

DOCTOR'S ORDERS

A fresh dose of technology is what the NHS needs, reports **Luke Graham**



THE PRIME Minister's recent pledge to increase the National Health Service budget by £20bn a year may have been an attempt to win over voters and distract the public from cabinet rows, Tory rebels, and near constant complaints about her handling of Brexit.

Instead, the announcement drew fresh criticism about how the proposed funding increase, equivalent to 3.4 per cent a year, was still far short of the four per cent rise experts say the service needs. It ignited warnings of another crisis come winter, and brought fresh scrutiny onto the NHS.

Putting aside how Theresa May will afford this present to the NHS ahead of its seventieth birthday on 5 July, questions are rightly being asked about the best use of the money. How can NHS organisations continue to increase productivity and efficiency, reduce waste, and improve health outcomes for patients?

Technology is probably on May's mind. Her budget announcement came hot on the heels of a speech she made late last month, calling on the health service to work with the tech sector to make use of artificial intelligence (AI) and big data to transform healthcare by, among other things, quickly and accurately predicting chronic diseases.

Certainly one group keen for technology to make more of an impact is the TaxPayers' Alliance (TPA), which launched a campaign this week to "automate the state", urging for the pace of automation in healthcare – and public services more broadly – to be increased in light of the budget announcement. Its research predicts that automation could save the taxpayer £17bn a year by 2030, almost covering the proposed NHS budget increase.

Among the TPA's proposals is a call to automate the role of the GP receptionist by moving to a secure online platform for booking appointments, in order to save time and effort for both the patient and surgery.

Another is to integrate automated processes and sensor technology to monitor a hospital patient's vital signs, allowing nursing staff to focus on more pressing matters.

"Automation of jobs in the public sector is inevitable in the coming decades, and there is a way to automate the public sector that is beneficial to all," says Andrew Allum, chairman of the TPA.

"Public services would be better, faster, and cheaper. The private sector has a serious skills shortage, and unemployment is very low, so now is the time to begin releasing people from repetitive public sector jobs to do more rewarding and valuable private sector jobs."

However, automation and technology are not the answer on their own. According to Dr Hamish Graham, manager of the Pfizer Healthcare Hub which works with health technology startups, skilled entrepreneurs are also a piece of the puzzle.

"Technology is often a tool, and it doesn't matter how good the tech is, the entrepreneurs bringing that technology forward, and their vision for how it's going to change the world, actually make things happen. Often, the entrepreneurs are the secret that unlocks the power of the technology."

One such entrepreneur looking to revolutionise the healthcare sector is Raja Sherif, founder and chief executive of FarmaTrust, which uses blockchain technology and AI to track and trace pharmaceutical drugs across the globe.

The World Health Organisation reported in November that 10 per cent of drugs in circulation in developing countries were fake, leading to tens of thousands of deaths due to ineffective – and potentially poisonous – pills.

"It's not just an issue in the developing markets, we have this problem in the developed world," says Sherif.

"A lot of kids who are buying pharmaceutical drugs from these online pharmacies tend to get fake or poisonous drugs, which can cause them serious problems, or even death in some cases."

FarmaTrust's system tracks a packet of drugs from the point of manufacture to the point of consumption, as well as collecting data at various points of the supply chain. The company's system can also track the expiry dates on drugs, and can alert institutions to when a product is about to expire, which could prevent waste. It's estimated that unused medicines cost the NHS £300m annually.

And by collecting all this data, Sherif says FarmaTrust will be able to use its AI to start making predictions about what drugs will be needed where, and in what quantity, in order to make the drug-making process more efficient.

"In the UK, there is a lot of waste in certain institutions, including the NHS, because they don't have transparency of which drugs they've got where, and how much they need in the future. So we really want to get in to helping a lot of these institutions become more efficient and more calibrated in terms of their needs, and help save lives as well as money."

> **Automating public services could save £17bn a year by 2030**

The NHS has been criticised for being slow to adapt to new innovations and ways of working, with complaints that bureaucracy holds it back. But this is unfair – its history is actually one of tremendous technological change, from new surgical techniques to wonder drugs and DNA sequencing.

"If you spoke to someone 70 years ago, and told them people would be putting cameras in pills that could see their insides, without them even being in hospital, they probably wouldn't even believe you. If you told them that people would have surgery with lasers and robots, they wouldn't have believed it," says Graham.

"The future in 70 years' time is harder to imagine, because we only know what we've got now and what we can see emerging."

And what we see emerging is the integration of the blockchain, automation, personalised medication, and bespoke preventative care.

If the NHS were a person, it would already have retired and started collecting its state pension at the ripe old age of 70. But with a prescription to adopt new technologies being brought to market by innovative entrepreneurs, the service may be set to continue working and could receive a much cleaner bill of health in the future.

Facial recognition vs. verification: Get your facts right

SEVERAL stories last month reported that facial recognition technology used by UK police was "staggeringly inaccurate". Yet in the last six months, multinational financial services firms, such as ING and Rabobank, have started using automatic face-matching to replace in-person identity checking. The question is, how reliable is this technology?

To begin with, these are in fact two different technologies. They solve different issues, and don't experience the same problems. Trying to spot a suspect in a crowd is like trying to find a needle in a haystack. Any of the world's 7bn inhabitants could look like a suspect on CCTV. The purpose of facial recognition here is to help officers thin down this haystack. It's therefore hardly surprising that this recent media furore set unnecessary alarm bells ringing.

There is, however, a question of personal privacy to be addressed. These systems help discover where people are, and if they were in a specific location. But what they don't do is confirm if people are happy to be identified in this manner. Our police and society at large benefit, not the individual.

Now, let's get another thing clear. When a person's ID documents are verified against a selfie of that individual, something quite different is happening. This is not recognition. Here, facial verification tools are being used to determine whether a customer is in fact who they claim to be – just as humans would at border control.

Modern machine learning is already very effective at doing this. In fact, it is about 100 times more accurate than the trained border staff assessed for a study conducted in 2014 at the Sydney Passport Office.

If we – the public – are to trust one another digitally, verification technology will be a critical means for sustaining faith. Customers would benefit from a faster, simpler, and more reliable service, which also means we can do away with laborious in-person ID checks. From a privacy standpoint, there are no issues.

Facial verification is incrementally replacing such in-person checks. Its ability to onboard new customers, authenticate returning users, and replace passwords means it is increasingly adopted by governments and banks alike. Performing these checks in the cloud prevents device limitations getting in the way, too. Verifying a person's face rather than their paper trail is the most secure way to confirm their identity.

Nowadays, it is easier to create fake imagery than ever before. Free apps are able to turn a photo into a moving avatar that blinks, speaks, and gestures. These convincing spoofs pose a threat that we can only overcome with remote verification.

Whether it's crossing a border or accessing a bank account, we have to be certain that there isn't just a dog with an iPad over its face trying to steal someone's identity. An individual's legitimate presence needs to be confirmed, and their identity protected. Thankfully advancements in facial verification enable us to do precisely that.

Andrew Bud is founder and chief executive of iProov.