

THE COMPLETE GUIDE TO **IT IN THE NHS**



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IT health check



The organization is the biggest employer in Europe, the recipient of around 10 percent of UK government spending, and deals with over 1 million patients every 36 hours.

IT professionals who serve it have to navigate a labyrinthine organizational structure, enormous data siloes, a fragmented IT ecosystem, and a complex relationship between public and private sectors that can regularly ignite the passions of the public and politicians. This landscape is all set against a backdrop of a constant drive for efficiency powered by technology.

The IT projects that this strategy has unleashed have not always lived up to their promise, from the repeatedly postponed deadlines to go paperless to the multi-billion pound collapse of the National Programme for IT. But when the tech succeeds, it doesn't only save money – it saves lives.

Now under Matt Hancock, the NHS has a health secretary who has a self-professed “unsurpassable enthusiasm for tech”, gained during his previous role of as Secretary of State for Digital, Culture, Media and Sport (DCMS), and an ambition to build “the most advanced health and care service in the world”.

He has gone on to publish a new technology vision for the NHS, launch NHSX as a new body to lead digital transformation of the organization, pledge to invest £250 million in healthcare AI, and offered public support for digital healthcare providers in the private sector.

So it seems like no better time to review the state of IT across the NHS, from deep dives on Hancock's

big moves, to the latest and greatest IT projects being implemented across the UK's health service. Here is our complete guide to IT in the NHS. **Thomas Macaulay**

Contents

- 4** What is NHSX?
- 11** Morecambe Bay NHS Trust creates analytics 'command centre' with Qlik
- 15** Chelsea and Westminster NHS Trust turns to RPA to slash admin time
- 21** UK hospital uses Osso VR headsets to train surgeons
- 25** Babylon Health director of NHS services plans ambitious UK expansion
- 32** Liverpool addresses healthcare inequalities with Liversnerds Lab test bed



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What is NHSX?

Inside the government's new healthtech unit

In February, health secretary Matt Hancock unveiled NHSX, a new body that will lead the digital transformation of public healthcare nationwide.

“NHSX will combine some of the best minds from among the NHS, leading innovators and government into one unit to set national policy, remove red tape and create a culture of innovation to allow the best innovations to flourish,” Hancock said at the time.

He later added that the “X stands for user experience” and that the unit had been set up for two reasons: to “bring together our tech leadership into one decision-making point” and “to bring the culture, the openness, the productivity, the speed of iteration of the Internet to the way we deliver tech in health and care”.

The announcement was met with a mixture of confusion over what this mysterious organization would do, concern that it would take work away from existing departments, and hope that it could help solve the NHS's long-running IT issues. The unit opened in shadow form in April ahead of a full launch on 1 July. The delay was somewhat puzzling to Harry Evans, a researcher at healthcare think tank the King's Fund.

"I'm not entirely clear about why it's July and not now," Evans told us. "I can only imagine it's mainly because they haven't yet worked out exactly what NHSX is going to do and how the levers work."

This uncertainty has heightened concerns about the government's plans. Here's what we know about NHSX.

What will NHSX do?

NHSX was established to drive digital transformation and lead IT policy across the NHS by bringing together teams from the Department of Health and Social Care (DHSC), NHS England and NHS Improvement into one central unit, led by NHSX CEO Matthew Gould.

The new body will oversee the IT strategy currently spread across multiple organizations. Its specific responsibilities are setting national policy and developing best practices for NHS technology, digital and data, enforcing IT standards, promoting interoperability, improving procurement, supporting new technologies, and developing digital skills and culture.

In April, it announced a series of initial aims: delivering a new Internet-based technical architecture for all of health and social care; mandating internationally recognized technology and data standards across the NHS; and teaming up with NHS England's cancer and

mental health policy teams to identify how technology could improve the patient experience.

NHSX will also scrutinize all significant spending on NHS technology transformation in England. In June, it completed its first major review of NHS tech spending, which resulted in cutting the 30 different digital transformation programmes run centrally by the NHS down to 10 priority areas:

- 1.** NHS app and citizen ID
- 2.** Digital child health and maternity
- 3.** Integrating community providers (including pharmacists, optometrists, dentists and ambulances)
- 4.** Screening
- 5.** Booking, referrals and appointments management
- 6.** Standards (including medication standards)
- 7.** Primary care
- 8.** Urgent and emergency care
- 9.** Social care
- 10.** Local capability (including LHCR, HSLI, GDEs and Carter money)

Weeks later, Gould announced on Twitter that Simon Eccles, the chief clinical information officer for the entire NHS, will serve as deputy CEO of NHSX, and that Hadley Beeman, the chief technology adviser at the Department for Health and Social Care (DHSC), would step in as acting CTO. The new leadership team gave a hint of Hancock's plans for the unit.

Taking digital control

NHSX is widely viewed as Hancock's attempt to gain direct oversight of the NHS's digital strategy. It was

therefore no surprise when Matthew Gould was chosen as NHSX CEO, as he had previously worked at the Department of Digital, Culture, Media and Sport, where Hancock was a minister until his appointment as health secretary in July 2018.

In his new role, Gould will report directly to Hancock, as well as to the chief executives of NHS England and NHS Improvement. In his inaugural blog post for NHSX, Gould was reticent to write about specific plans and instead focused on his approach to the NHS App, which he envisions as a “platform for innovation” on which third-party developers could build their own services through APIs.

He previously served as British ambassador to Israel and held an array of roles in the civil services, but had never worked in healthcare before joining NHSX. The appointment of an outsider suggests that significant structural changes may be coming.

NHS Digital, the arms-length body that provides information, data and IT systems for commissioners, analysts and clinicians in health and social care today, is one of the organizations that may have the most to lose.

NHSX will be the new commissioner for NHS Digital, and the new body is expected to take over some of its responsibilities. In April, Digital Health News revealed that a section of the NHSX website that claimed the new unit “will be funded through existing budgets, transfers of staff and savings from NHS Digital, which is currently restructuring” had been removed from the site, which DHSC officials said was because it had been published by mistake. A DHSC spokesperson told the title that “NHSX will bring together existing teams into one unit, so no new funding will be required”.

Digital Health News also reported that NHS Digital chief executive Sarah Wilkinson had emailed her staff to reassure them that while she expects NHSX to define the organization's future remit and "assume responsibility for a small number of areas that NHS Digital had previously led", its "book of work" wouldn't change in the near-term, although there may in future be "strategic shifts that manifest in changes to the work that we are commissioned to deliver".

Gould will also have to work closely with NHS England, the Department of Health and Social Care, NHS Improvement, and the Government Digital Service. Keeping them all happy will be a tricky task.

In a pair of tweets announcing his appointment, Gould sought to provide some assurance.

Excited to become the CEO of @NHSX. I couldn't ask for a more worthwhile challenge. We will have a single-minded focus on improving care, by giving staff and patients the tech they need. Looking forward to working w @NHSEngland, @DHSCgovuk & @MattHancock<https://t.co/O27oAPYvEf>
— **Matthew Gould (@matthewsgould)** April 4, 2019

Key part of the new job will be to work with the huge talent already in the #NHS. @NHSDigital and the brilliant @SarahFWilkinson will be a massive part of this, and I'm looking forward to working closely with her and her team.
— **Matthew Gould (@matthewsgould)** April 4, 2019

Evans believes the tweets suggest a certain distinction between the different organizations.

“You could imagine that you want to work closely with DH and NHS England because technically you are responsible to them and they pay your bills,” he said. “And then there’s a separate thing about NHS Digital, which will be accountable to NHSX... It seems to me that’s then a different relationship to the one with NHS England. It doesn’t feel like anything there has massively changed except for there is clearly a slightly different relationship being carved out with NHS Digital to the other national bodies.”

Will NHSX unify or divide?

Hancock argues that NHSX will bring together the NHS’s disparate digital teams, but critics worry that it will only add further disorder.

Niall Dickson, chief executive of the NHS Confederation, which represents organizations that commission and provide NHS services, warned that “creating yet another arms-length body at the centre, however innovative, will not in itself drive the technological revolution we all want to see”, and asked “why is NHS Digital not taking this forward?”

“More importantly, if NHSX is to succeed, it needs to draw on the expertise within the service and harness the fantastic work already underway as well as showing what is possible,” he added.

“It is vital that we strike the right balance between support and control. The lessons from the past suggest that fewer diktats and more collaboration from the centre will bring about more effective change more quickly.”

Evans has some sympathy with Hancock’s aim to add oversight to a fragmented digital landscape, but has doubts about his strategy to do this.

“I think that there’s still a remaining question for me about whether or not this is the most effective way of fragmenting the system,” he said. “Traditionally, fragmentation occurs because there are too many organizations, so I’m not convinced the setting up [of]another one is the way to unfragment it. But that doesn’t necessarily mean that I don’t agree that there’ a problem. It’s just, I think I disagree slightly on what the solution could be.” **Thomas Macaulay**



Credit: iStock

Morecambe Bay NHS Trust creates analytics ‘command centre’ with Qlik

The system has boosted triage and discharge times by creating an integrated view of service capacity and predicting future demands

University Hospitals of Morecambe Bay NHS Foundation Trust (UHMBT) has teamed up with Qlik to create an analytics ‘command centre’, which has transformed the triage and discharge system by providing insights into treatment across various healthcare pathways.

The command centre is a physical analytics hub in the hospital, where five large touchscreen displays along the wall present different aspects of the emergency care journey. They offer insights into the ambulances on their way to the hospital and developments in the emergency department, which help staff prepare for the arrival of patients by assessing their needs and hospital resources.

The system has already reaped a range of benefits. The proportion of patients triaged within 15 minutes of arrival at the emergency department has grown from 67 percent to almost 95 percent. The average percentage of patients discharged by midday has increased from 16 percent to around 19 percent, and the amount being cared for in a non-medical ward due to capacity pressures has shrunk from an average of around eight percent to two.

Rob O'Neill, head of information at UHMBT, believes that the key to success was designing a system to fit the needs of staff. "The analytics are designed to be really intuitive... The clinicians have the ability within any of the analytical objects to drill down to a patient record level, which is a really important requirement for them," he tells us. "It is a clinically targeted system, but it also allows a higher-level operational view."

As evidence of the impact, O'Neill says that system has cut the average time for meetings on patient flow from half an hour to 15 minutes, by offering staff a user-friendly evidence base for their decisions.

IT helps staff spread across a rural geography, covering over 1,000 square miles in the North West of England, to view the same analytics on their phones as those shown on the command centre screens, as well as those working inside the hospital.

O'Neill recalls that just after the system had gone live, one of the emergency department matrons walked into the command centre and immediately started pointing out information on the touchscreens that would help his team access patient acuity.

“He said to us that before they existed to react to the demands placed upon them, but with the tools we’ve given them, they can see problems before they happen,” he reveals. “And that helps them to mobilize staff and better prepare for it.”

Why Qlik?

UHMBT chose to develop the system late last year after staff raised concerns about how their tightened budgets would cope with an increasing volume of patients. The hospital was already receiving around 100,000 A&E and 40,000 emergency inpatients a year, and the number was ramping rapidly as winter approached.

They wanted to maximize resources by developing a system that could offer both real-time analysis of events on the emergency care pathway and predictive tools that would help them prepare for future pressures. The Trust’s previous experience of using Qlik Sense convinced it that the solution would offer a flexible analytics system that staff could co-design through an agile development process.

Planning began at the end of September 2018 and the command centre was up and running just months later in December.

According to O’Neill, the speed of production was made possible by UHMBFT’s clinically driven digital strategy. This allowed the Trust to implement electronic patient records that are now used by 1,350 users at any

one time to generate over 200,000 customized forms of data every month, including 14,000 daily drug-record transactions for inpatients.

“It was really that work which meant that the system was at a mature enough level to be able to implement the concept of a command centre,” he reveals.

In the future, UHMBT plans to install a module that shows the flow of patients through the operating theatres and uses predictive algorithms to intelligently schedule patients into theatre slots.

The organization is also exploring how understanding the flow of referrals into social care could identify capacity for patients in care settings outside the hospital.

O’Neill believes that adding these updates to the existing system will be straightforward due to its user-driven development process, which can rapidly scale in achievable chunks.

“We’ve got the ambulance view and the acute hospital view at the moment, but being able to add primary care and post-discharge social care on a modular basis is a really important concept,” he adds. “That works for us. And we can evidence return on investment as we go along, which helps us with buy-in.” **Thomas Macaulay**



Credit: Chelsea and Westminster NHS Trust

Chelsea and Westminster NHS Trust turns to RPA to slash admin time

Centre boosts efficiency of back office activities

Chelsea and Westminster Hospital Foundation NHS Trust has dramatically reduced the time spent by staff on tedious tasks after launching a Centre of Excellence for the use of robotic process technology (RPA) technology. The Centre was established to boost the efficiency of back office activities by automating high volume, repetitive tasks

across finance, procurement, human resources and informatics departments through software bots.

The automations that it releases are built on the Anytime Anywhere platform from the RPA vendor Automation Anywhere, which consists of a Bot Creator and Bot Runner, all managed through the Control Room tool.

The automations built on the platform have already yielded some impressive results. They include one bot designed to check income and costs in the Trust's financial accounts, which previously would take a team of eight people the best part of a week to check every month. Introducing a bot has allowed the Trust to automate 60 percent of that work, by automatically processing everything that's verified as accurate and leaving only a list of exceptions that require the team's attention.

Another early bot assesses VAT returns, a complicated task in the NHS due to its array of exemptions and reduced rates. At Chelsea and Westminster, an accountant spends three days every month correcting errors in the data

"We've now automated that," Sandra Easton, Chief Financial Officer at Chelsea and Westminster Hospital NHS Foundation Trust, tells us. "At the moment, we've taken out 30 percent of that work just by using the basic RPA, but we will be enhancing that to make it more intuitive, and we expect to be able to take about 70 percent of that workload out. It's also got the benefit of being slightly better than a person, and more consistent."

The initial RPA programme was limited to four areas of corporate services as they provided a safe back office environment to test the system and allow

Easton to make the case for future deployments in patient-facing areas, and also because staff were already dedicating much of their digital focus to a new electronic patient record system.

“When I look at what other people have done, not necessarily in the NHS, they’re very dependent on either the manufacturer of the product to maintain it and develop it and tweak it, or you have an external organization that supports it,” says Easton. “What I wanted to create was a Centre of Excellence that would do all that maintenance, but also actually drive the programmes forward in a way that will really benefit us. No one in my team knows better what needs to be automated than the people doing the job themselves.

“Now, what I want to do with the decisions that we come up with is to translate those into other NHS organizations, and having the skills in my team that I can then take out to other organization just makes it much more efficient for the rest of the NHS.”

Creating a Centre of Excellence

Last summer, Chelsea and Westminster Hospital Foundation NHS Trust put out a call for vendors to propose digital solutions for the organization’s numerous challenges. The Trust received responses from 21 vendors, who were whittled down to a shortlist of six. The submission from Automation Anywhere was chosen as the winning bid due to a combination of its cultural fit with the Trust and the scalability of its tech.

“We felt that the values of Automation Anywhere melded nicely with our organizational values,” reveals Easton. “And they also had the ability to lift and shift all the solutions that we come up with at Chelsea and

Westminster throughout the rest of the NHS, to really cascade our learning through the other 250-odd provider hospitals within England.”

Easton acknowledges that some of the 6,000 Trust staff members needed reassurance that the bots wouldn’t take their jobs. She assured them that the project would free up their time to focus on providing high-quality patient care to the one million people the Trust serves, and added that there are still no plans to reduce employee numbers.

Easton is convinced her staff now share her faith in RPA. “The love it,” she says. “Sitting at a computer screen for a whole week just looking at spreadsheets is not the most attractive job in the world. What they can do now is in the morning, have that list of exceptions, and go out to talk to board managers and talk to commissions to find out what’s actually going on in your department, and really improve the information that we have.

“That sort of feedback and reaction is really what’s driving the Centre of Excellence. People really want to be involved, because they see how this creates the capacity for them to do the interesting bits of their jobs.”

Staff input

The Trust ensured that the implementation would serve the needs of staff by inviting a selection of them to a workshop where they came up with a range of ideas for bots that are now being developed. Easton believes that closely involving staff in the programme has been a crucial factor in the success of the deployment.

“If I hadn’t have the team as engaged as they are now, I probably wouldn’t have any bots going and still would be dragging people along. So you have to get

your team engaged. And then you have to think big and fail fast. If something's not going to work, just bin it and move on to the next thing because there are so many things that you can be doing with this technology.”

A pilot project that automated a set of processes in the finance department provided evidence of its potential by improving speed, efficiency, and turnaround times. New bots are now being regularly rolled out, and the Trust aims to release 100 by the end of the calendar year

“Then it's about engaging the rest of the business,” explains Easton. “We've already got clinicians who are getting excited about things like preoperative assessment, patient scheduling for operations and outpatients and that sort of stuff. That's definitely the next step on our journey when the organization are ready to receive it.”

Impact of RPA on the NHS

RPA technology is quickly gaining traction in the NHS as a way to help Trusts cope with swinging cuts. The Institute for Public Policy Research (IPPR), a centre-left think tank, estimates that automation could save the NHS £12.5 billion a year – almost 10 percent of its annual running cost – by freeing up the time of frontline staff.

Easton hopes her Trust's Centre of Excellence will serve as a model of best practice for RPA for every NHS organization, and adds that the bot-sharing supported by Automation Anywhere's Bot Store will help disseminate the lessons learnt at Chelsea and Westminster.

She believes that RPA could play a central role in bringing NHS services together, a key tenet of the government's NHS Long Term Plan.

“Within the whole NHS there are only two HR systems in use, So if I build a bot that does something with my HR system, 95 percent of the rest of the NHS will be able to use it because they all have the same HR system. Only 5 percent will need a different one,” she says.

“There are so many synergies and the potential to really cascade this out as we start bringing back offices to work closely together is huge. And then it will drive huge efficiencies for the sector.” **Thomas Macaulay**



Credit: iStock

UK hospital uses Osso VR headsets to train surgeons

Naeem Soomro, director of robotic surgery at Newcastle Hospital believes that VR could save time, money and lives

Surgical technology has developed rapidly in recent years, improving patient outcomes, but arming doctors with a dizzying array of tools and techniques that many struggle to get to grips with before wielding them in the operating theatre. Research suggests that when graduating from general surgery residency, about 30 percent of trainees were still unable to operate independently.

Dr Naeem Soomro understands this problem all too well. The director of robotic surgery at Newcastle Hospital has been rigorously exploring how to leverage technology to improve training since he was appointed in 2012. His investigations led him to Osso VR, a virtual reality training platform used to prepare surgeons for difficult procedures.

Osso VR allows his department to run countless simulations of operations and programme any procedural changes into the system. Multiple doctors spread across different physical locations can train together in one VR space, and supervisors can use the analytics tool to assess their individual skills.

“We bought their system to train our orthopaedic trainees to be able to do minor procedures in knee surgery,” Dr Soomro tells us. “What we hope is that once they are able to do that, they can move on to doing operations on cadavers and in real life much more quickly.”

Virtual benefits

Newcastle University boasts the widest adoption of robotic and minimally invasive surgery in the UK, and holds over 300 surgical training courses each year, but the tuition remains expensive and time-consuming.

Dr Soomro believes that VR training could help dramatically expand access to minimally invasive surgery and save the NHS millions of pounds.

“Currently, what happens in the UK is it takes 15 years to train a surgeon, and that’s a huge amount of time,” he says. “But I think there’s a possibility we can train surgeons in the future much more quickly, because they will train in those environments.”

The facilities where they use simulators and cadavers are expensive and there aren't many in the UK. "But if we develop VR or AR, then people will be able to use it in their own time and at their own pace," argues Soomro.

Osso VR also provides objective measures of surgical skills through the data analytics feature that tests a doctor's knowledge of the procedure, level of precision and overall efficiency. The results can be used to assess each doctor and identify areas where they can improve.

Soomro says that this information can be used to predict someone's performance and flag up areas they're having difficulty with. "In future, by using all these instruments, we will be able to analyse outcomes and progression, which we haven't previously been able to do in surgeons, and be able to define what a good surgeon looks like digitally.

"I think all of these metrics will help us get a bigger picture so we are also undertaking research to be able to define those metrics and use AI and machine learning to be able to see whether we can actually identify those areas."

Choosing Osso VR

In the US, Osso VR is already being used in a range of orthopaedic residency programmes, including at the Vanderbilt University School of Medicine, Columbia University, and Harvard Medical School, but Newcastle Hospital is the first European facility to adopt the system.

Newcastle chose Osso VR due to its reputation and encouraging results of early trials. "There is evidence of effectiveness and efficacy from these training systems in America," says Dr Soomro. "That was the thing that we recognized with Osso VR."

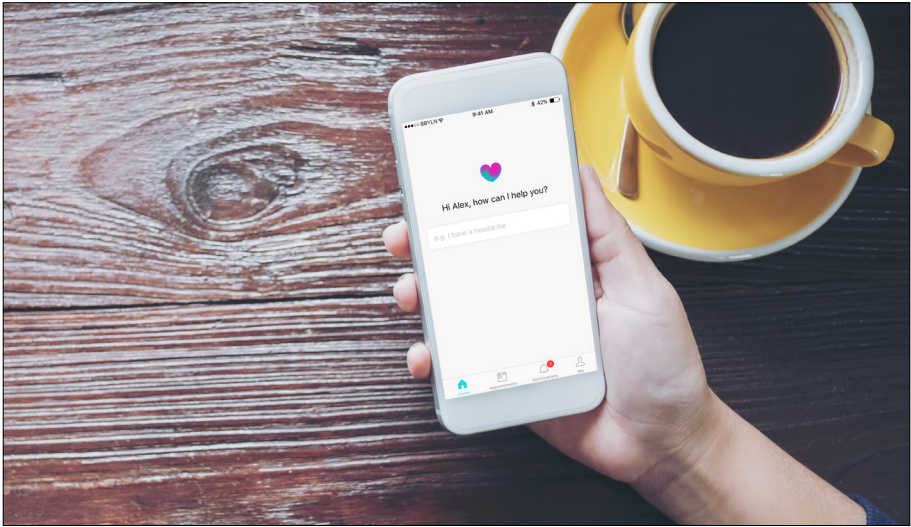
In a company-run study of first-year medical students, those trained on the system performed procedures twice as well as those who underwent traditional training methods, as measured by the Global Rating Scale, a scoring system for surgery.

However, the department remains open-minded to working with other companies too. This could include incorporating haptic feedback developed by FundamentalVR, and expanding the use cases from orthopaedics to other surgical specialities.

Dr Soomro believes that the future digitization of surgical practice will not only transform treatment outcomes but also help society to cope with changing healthcare needs. He compares the issues in surgical practice to ones observed by Thomas Robert Malthus in the 18th century, an English cleric and economist who feared that the global food supply could not keep pace with human population growth.

“He said people would starve... but that didn’t happen, because we were able to use technology to produce more and to deliver more grain,” says Dr Soomro. “In the same way, I think there’s a common perception that we don’t have enough resources to spend on our health, which is a real concern, and the only way we can overcome that is to use technology to overcome our cost pressures in the same way.

“You have to have a bigger picture. How would you cope with pressures on delivery of care? You can’t keep on being more productive with the same methodology. You have to use a different methodology – robotics, artificial intelligence, optics and everything else. Technology will be the thing which is going to take us out of this current problem.” **Thomas Macaulay**



Credit: Babylon Health

Babylon Health director of NHS services plans ambitious UK expansion

The digital healthcare provider is making major inroads into the NHS, but attracting controversy along the way

The rise of online GP consultations in the NHS has divided the opinion of health sector-insiders. Critics condemn the threat to traditional practices and the risk of harming vulnerable patients, while proponents praise their convenience and cost savings.

Babylon Health has been the focal point of many of these debates. The London-based start-up is best known as the provider of GP at Hand, an app that offers

AI-powered diagnoses and online consultations with doctors that is currently available to anyone who lives or works within 40 minutes of five affiliated London clinics.

The service has grown rapidly since it launched in November 2017. Around 48,000 people have now registered with GP at Hand, making it one of the 10 biggest general practices in the country, and it recently gained approval to be rolled out in Birmingham. Babylon has ambitious plans for nationwide NHS adoption, but critics worry about the effectiveness of its treatment and its impact on the NHS.

Doctors have warned that it is disrupting regular NHS services and risking patient safety, and Babylon has also had run-ins with regulators. In 2017, the company tried and failed to prevent the publication of a Care Quality Commission (CQC) report that found “the service was not providing safe, effective, or well-led services, but was providing caring and responsive services”.

Paul Bate, Babylon’s director of NHS services and a former executive director of strategy at the CQC, is confident these concerns have now been addressed. He argues that the system facilitates, rather than replaces doctor-patient interaction.

“We know that something like 90 percent of GP appointments can be safely carried out without the need for the GP and the patient to be in the same room,” Bate told us from deep within the bowels of London’s cavernous Printworks, the venue for Privatar’s In:Confidence conference in April.

“That’s much better for the person using the service because they don’t have to travel and it’s also great for the GPs. It’s a better experience for them. Now, there are exceptions. It’s digital first, not digital only. If

you're a woman who needs a cervical smear for cancer screening, then that is a face-to-face appointment straight away, and there is zero point in us doing anything digital for taking blood, for example. But the vast majority of the time, you can do things digitally, so we ask. That's the model."

Political support

Babylon has already attracted supporters in high places. Health secretary Matt Hancock controversially endorsed GP at Hand specifically in a September 2018 interview with *The Telegraph*, describing it as a "revolutionary" service that should be "available to all, not based on their postcode".

His comments followed reports that NHS England had blocked Babylon's efforts to offer services in Birmingham. The plan included a physical practice in the city but keeping the host service in London, which raised concerns that users of GP at Hand wouldn't receive invitations to national screening programmes as they would be sent to the right address.

Hancock responded by calling for the NHS to change its rules to help the likes of Babylon develop digital solutions and navigate an often bureaucratic and suspicious path into public healthcare provision. NHS England has since retracted its objections, giving Babylon the green light to expand to the UK's second city. Bate believes having a health secretary with a self-professed "unsurpassable enthusiasm" for technology could benefit Babylon's plans to expand its NHS offering.

"As the secretary of state says, if there are barriers to integration or to innovation, the right answer is to take down those barriers," said Bate. "So we were

really excited that we were able to expand out beyond London. To have the largest practice in the country, even though it only serves one city currently, just shows the scale of interest there is. It will not be for everybody, but the point is choice.

“Now that we have been enabled to go live in Birmingham – and we very much hope and expect other cities to follow quickly – that’s a really positive statement, from the government and from the NHS as a whole, that it wants to see innovative providers of safe healthcare services like Babylon offering their services, and then let people choose.”

Addressing concerns

The expansion to Birmingham is just the start of Babylon’s NHS ambitions. The company claims that scores of practices have expressed interest in offering GP at Hand to patients, while healthcare journal *HSJ* reported in September 2018 that Babylon was speaking to 17 CCGs about its digital services, and planning to extend its GP partnership into Southampton and Leeds.

Babylon is entering a potentially lucrative market. It’s estimated that the virtual consultation market will grow from 19.7 million consultations in 2014 to 158.4 million by 2020, according to market intelligence firm Tractac. It has also received significant backing from NHS England, which announced in November 2017 that it would contribute £45 million over three years towards the costs for online consultation systems for GPs.

Critics worry that this investment isn’t going to the right place. Digital services typically appeal younger, healthier users than sick, elderly patients with more complex and costly healthcare issues, leaving the NHS

with less funding for people with greater needs. Bate is keen to reassure NHS organizations that Babylon Health won't disrupt their services.

"I would assure them that it's great care for patients," he said. "That's the starting point: clinically safe, effective, high-quality experiences for the people using the services. If I go back to 1948, when a leaflet dropped through every family's door – and it genuinely did, at the inception of the NHS – and on the front page of that leaflet, there is a box and in that box, it says 'one: choose your doctor'.

"It's a very explicit answer, because right from the very beginning of the NHS that has been part of the offer, to choose your general practice. And that's enshrined in law. So I don't start from the point of saying does this or doesn't this disrupt the existing practices, but I start with what's the best way to get great healthcare to many people and do it in a way that the NHS feels comfortable and safe about a taxpayer-funded service."

Harry Evans, a researcher at healthcare think tank The King's Fund, believes recent changes to GP contracts have partially addressed this by providing less money for new patients, but adds that the switching of healthcare providers may necessitate a different operating model.

"It's up to GP at Hand if they decide to go and set up their own GP practice, but if that service is something that a significant proportion of the London population wants, couldn't we be providing that through a different model?" he argues.

"If you want to go see a GP out of hours, it's commissioned by local Clinical Commissioning Groups. Couldn't we be doing that for video consultations as

well if that's something that we think is worth providing? We shouldn't get trapped in the mindset of thinking that all of these problems are unsolvable. They can be solved, but they may well be unsolvable if we want to keep our current model, GP practice, and have video consultations. In which case, we need to think about a different way of delivering that."

Fears of privatization

Babylon also offers private GP consultations and campaigners worry that it is blurring the lines between public and private healthcare, and leading to the development of a two-tier primary care treatment model.

Bate believes that the concerns are misplaced. "It isn't privatization," he said. "Almost every single practice that I am aware of is a profit-making body, and that has been the same way in primary care since the very start of the NHS. That's how the NHS was set up for primary care. That's what a general practice partnership is.

"The NHS founding principles are free at the point of need and taxpayer-funded. There is no change to that. Babylon and GP at Hand becomes an option for people to choose. They don't pay for their care. There is no change to the funding structures. I think what we do see is a very small number of quite vocal naysayers, often with quite strong vested interests, who like to jump on whatever they feel can get most interest."

Evans agrees that there is a role for private digital companies in the NHS, but is concerned about the way that their services are commissioned.

"It's usually people outside the NHS that bring the innovation because the NHS is used to doing things the same way," he says. "We need to be open to that

innovation and learn how to use it. But what that shouldn't mean is just trying to replicate what's already being done in the private sector.

“I think there's an important role for industry in the sector for doing that, but what it does mean is that the NHS needs to be an intelligent buyer of those products. That's the problem at the moment. I think there is a skills gap, and there are too few people doing analytics and innovation, but I don't necessarily think that's because in an ideal world they would be developing that stuff that the private sector is developing. I think it's because they need to be able to know what they should be buying from the private sector and currently don't have the skills to do that.” **Thomas Macaulay**



Credit: iStock

Liverpool addresses healthcare inequalities with Liversnerds Lab test bed

City one of the inaugural members of the Global Digital Exemplar scheme, which aims to develop healthcare technology for the home

Liverpool has some of the worst health inequalities in the UK, which it is trying to address by developing one of the country's leading healthtech ecosystems. The city has the UK's only 5G test bed dedicated to health and social care and is home to the Royal Liverpool and Broadgreen University Hospitals

NHS Trust, one of the inaugural members of the Global Digital Exemplar (GDE) scheme, a government project to advance digital healthcare.

One of the key objectives of the GDE programme is to develop healthcare technology for the home that will help reduce hospital stays.

Royal Liverpool and Broadgreen University Hospitals NHS Trust (RLB) wanted to design these tools alongside the patients who would use them by developing a testing environment powered by its unique 5G capacity. This led the Trust to create the Livernerds Lab, the first digital testing space of its kind in the NHS.

The lab consists of a smart room modelled on the rooms being built at the new Royal Liverpool Hospital, and a smart house with a bedroom, bathroom, living room and kitchen. Each of these is fitted with digital equipment including sensor technology, telehealth and virtual reality that help clinical staff remotely monitor a patient's heart rate, blood pressure, falls, and other indicators of changes to their health.

RLB CIO David Walliker tells us that the facility will help the NHS safely transition patients from a hospital bed to their own home.

“We need to put technologies into that room to identify, if you've fallen, if your machine has started beeping, and to take your vital signs,” he says. “We'll still do nurse observation, but that technology is necessary.”

The short-term objective is to develop technology for the new £335m, 646-bed Royal Liverpool Hospital, the opening of which has been severely delayed by the collapse of construction giant Carillion. In the long-term, Livernerds will be used to develop assisted living smart home technology that can reduce the strain on

NHS resources and improve healthcare outcomes across the country.

Developing a healthtech ecosystem

Livernerds aims to harness Liverpool's existing healthtech strengths and develop its capabilities for the future. The city is already the largest provider of telehealth in Europe, which makes it a natural test bed for remote healthcare monitoring.

Liverpool's community service currently works with global telehealth provider Docabo to provide patients with a "telemedicine in a box" service that allows the NHS to discharge patients and monitor them remotely. Livernerds is working with the company to expand that product offering.

Livernerds is also working with local SMEs such as Aquarate, which has developed an automated fluid intake and outtake monitoring system that uses sensors on cups and toilets to identify risk of hydration-related illness.

"We've got six or seven partners working at the moment on different sensor-based projects," reveals Walliker. "The holy grail to us is how we can connect that to our version of a home hub and link that securely back into the medical records via 5G."

Walliker believes Livernerds will encourage innovation in the NHS, which can be stifled by regulatory requirements and financial constraints, particularly for start-ups who can't match the R&D funding of larger competitors and need an affordable test bed to prove their technology works.

He also hopes to help create a local healthtech ecosystem that will support the city council's 'Health is

Wealth' campaign, a project predicated on the belief that a wealthy society will lead to improved health outcomes

“If we invest in the SMEs and in the start-up, then they'll employ locally, which means we're increasing the wealth in Liverpool, and that will indirectly help start bridging some of those health inequality gaps,” argues Walliker. **Thomas Macaulay**



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