

this week

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Trainees' tense wait after job chaos

As many as 1500 junior doctors face uncertainty about their future after “human error” at the Royal College of Physicians (RCP) meant that some ST3 candidates were wrongly ranked and may have received incorrect job offers.

Last month doctors throughout the UK who applied to the ST3 recruitment process were notified of their score, which indicates their likelihood of getting a job in one of 24 medical specialties. However, on 3 May the RCP discovered that a considerable number of candidates had been credited with the wrong score because of an error in transferring data from one computer program to another. Affected candidates were notified the next day.

The college said that it had been “working through the weekend to fix the ST3 offers process.” It was due to be rerun on 8 May to identify doctors whose revised offers differ from their original ones, and they will be notified on 10 May.

Jane Dacre, RCP president, and Andrew Goddard, RCP registrar, said in a statement, “We remain very sorry for the worry and disruption this is creating. We know all those in the recruitment round have been affected by the stress but most will still get the job they were expecting.”

Speaking on behalf of the junior doctors, Chaand Nagpaul and Jeeves Wijesuriya of the BMA said that the situation was “unacceptable” and that it had caused extreme anxiety for trainees “both emotionally and financially.” They said that they had “heard from trainees who have, after receiving these job offers, put down deposits on homes or arranged moves or whose families had adjusted their plans.” The BMA said that it would take legal advice regarding a possible breach of contract and potential compensation.

Lauren Cammaert, who had been offered a job in medical oncology, told *The BMJ* that she now felt “totally heartbroken.” “I only applied for one specialty, and I’ve known about my job for several weeks now,” she said. “I’ve given up the lease on my flat, and I’ve told all of my family and friends. I’m not sure what, if anything, is going to be done to compensate for the financial and emotional stress that this has caused us all.”

Rebecca Payne, who applied for a post in palliative medicine, said that she had been “ecstatic” to be offered a position after four attempts: “I accepted immediately and handed in my notice for my current role.”

Deborah Cohen, London

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The RCP’s Andrew Goddard (far left) and Jane Dacre apologised for the disruption caused, while the BMA’s Jeeves Wijesuriya and Chaand Nagpaul (far right) have said the situation was “unacceptable”

LATEST ONLINE

- Watch this week’s BMJ/King’s Fund discussion on the lessons from the Bawa-Garba case between GMC’s Charlie Massey, doctors, and health leaders. Visit www.facebook.com/bmjdotcom/



SEVEN DAYS IN



Jenner: doctors have “come a long way”

Before transitioning, Caitlyn Jenner questioned who she was every second of every day, but three years after coming out as a transgender woman, she now says, “I get up in the morning and I just be myself all day long.”

Jenner, a former Olympic decathlon gold medallist, was speaking to Fiona Godlee, editor in chief of *The BMJ*, on 4 May at the International Forum on Quality and Safety in Healthcare in Amsterdam. As a motivational speaker for more than 40 years Jenner said she wore a bra and tights beneath her suit and “felt like a fraud.” She told the forum her transition had taken so long because life as a father of 10 children and stepchildren was a diversion, “but the question in my head had never gone away.”

The medical profession had “come a long way,” she said, especially on the physical side of gender dysphoria. But there was still a long way to go. “The suicide rate among trans people is nine times that of the general population. It is important to recognise that diversity is good and everybody needs to be treated equally.”

The keynote address and interview can be seen at <https://internationalforum.bmj.com/amsterdam/live-from-amsterdam-2018>

Zosia Kmietowicz, *The BMJ* Cite this as: *BMJ* 2018;361:k2025

Immigration

NHS staff protest against “hostile environment”

Doctors, nurses, and the public gathered in Westminster, London, on 2 May to protest against the Home Office’s use of NHS staff in immigration enforcement. They used a spoof van organised by Doctors of the World UK and the campaign group 38 Degrees. It parodied the “Go home or face arrest” vans that became synonymous with then home secretary Theresa May’s “hostile environment” policy in 2013—but with a new message: “Doctors acting as border guards? 70 000 doctors and patients say ‘no’ to sharing patient data with the Home Office.”

Legal news

GP who sexually assaulted patient is jailed

A GP was jailed for 15 months after being found guilty of sexually assaulting a patient who visited a walk-in centre fearing that she was having a heart attack. Rajeshkumar Mehta, 64, was working as a locum at Sparkhill Primary Care and Community Centre in Birmingham in May 2016. He denied one count of sexual assault but was found guilty and jailed. The judge told Mehta that the patient “looked to

you for professionalism, care, and concern—and you returned that request by abusing her.”

£19m for delayed blood transfusion at birth

A 9 year old girl will be awarded more than £19m in compensation from the NHS after King’s College Hospital in London admitted “shortcomings” in her neonatal care. The girl, who has not been named, was born with severe jaundice, and her lawyers claimed that the hospital negligently delayed giving her a total blood transfusion. Had this been done, they said, she would have escaped permanent injury. High Court judge Robert Francis QC approved the settlement.

Public health

Childhood obesity has to be fought on several fronts

Nutrition experts from the NHS, academia, local government, TV, and think tanks told MPs that the battle to cut childhood obesity must be fought on several fronts. The introduction of a soft drinks levy last month was a

positive step but not enough to deal with the growing problem, they said during an evidence session on 1 May. Jamie Oliver (below), celebrity chef, said, “Now is the time to stop looking at single approaches [and] look at a multipronged environmental approach.”

Concern over learning disability deaths

A review into the deaths of people with learning disabilities in England has identified serious concerns with their care. The Learning Disability Mortality Review programme was notified of 1311 cases from July 2016 to November 2017. Only 103 (8%) of these case reviews have been completed to date. In 13 (13%) of those, the person’s health had been adversely affected by delays in care or treatment, gaps in service provision, organisational dysfunction, neglect, or abuse.

Maternal health

Mental healthcare for all new mothers by 2019

New and expectant mothers will be able to access specialist mental health community services in

every part of the country by April 2019, NHS England pledged. In 2014 only an estimated 3% of England had good access to perinatal mental healthcare. NHS England said that a further



£23m investment would ensure full geographical coverage by next year. The funding is part of a £365m package of measures to transform specialist perinatal services by 2021.

High child mortality is due to poor maternal health

Higher rates of premature births, lower birth weights, and more congenital abnormalities explain the much higher child mortality in England than in Sweden, showed a comparative study published in the *Lancet*. Data analysis of more than 3.9 million births in England and 1 million in Sweden showed 66% higher child mortality in England’s newborns. Over three quarters (77%) of this excess risk of death was explained by differences associated with maternal health, said researchers.



MEDICINE

Infectious disease

Illnesses from US ticks and mosquitoes triple

Three times more US patients fell ill from a vector-borne disease in 2016 than in 2004, the Centers for Disease Control and Prevention warned. Some 96 075 cases of disease caused by bites from mosquitoes, ticks (right), and fleas were reported to the CDC's National Notifiable Diseases Surveillance System in 2016, up from 27 388 in 2004. A recent spike was driven by the Zika virus, but a worrying long term rise has been seen in tickborne illnesses, especially Lyme disease.



extra £620bn—that's about four times the current NHS spend."

General practice

Fund social prescribing for all practices, RCGP urges

The government should give every GP surgery access to a dedicated social prescriber to help reduce workload, free up doctors' time, and prioritise the patients most in need, the Royal College of General Practitioners argued. In a 4 May report the college evaluated the potential effects of 10 high impact actions suggested by NHS England to cut GPs' workload. The RCGP said social prescribing—referring patients to non-medical care—was one of the most beneficial practices for teams and patients.

Research

Medical charities launch joint publication platform

A group of 23 members of the Association of Medical Research Charities are to develop a joint publication platform. AMRC Open Research aims to remove publication delays and to help charities maximise the value of donations by rapidly sharing every output from the research they fund. The new platform will use services developed by F1000 (Faculty of 1000) and a publication process first used by F1000Research.

Cite this as: *BMJ* 2018;361:k2024

NHS performance

Over-regulation and poor investment stifle services

The NHS has done well, but its performance is "middling" when compared with other western European health systems, said Jennifer Dixon (right), chief executive of the independent Health Foundation, at the inaugural annual NHS Confederation lecture. She blamed lower investment than in other European countries, saying, "If the UK had spent at the rate of Germany since 2000, then the UK would have invested an



HPV VACCINE

At least one dose of vaccine reduces the risk of high-grade lesions of all sorts 20-fold in those aged 15-26 who are free of HPV to start with
[Cochrane]



SIXTY SECONDS ON... CONTRACEPTIVE APPS



WHAT'S 'APPENING 'ERE THEN?

An increasing number of women in the UK are using contraceptive apps, is what. In 2017 almost 200 000 women were signed up to Swedish made *Natural Cycles*, the only app certified for contraception in the EU. This number increased from 5000 in 2016, the *Guardian* reported.

HOW DO CONTRACEPTIVE APPS WORK?

In essence, by tracking body temperature, the appearance of cervical fluid, and other indicators to identify when women ovulate and when they are most fertile. Users of *Natural Cycles* input their temperature each morning to allow the app to calculate their menstrual cycle. The device then indicates when they are able to have sex without protection.

BUT IS IT SAFE SEX?

Natural Cycles has highlighted the results of clinical studies of 23 000 women that indicated an effectiveness rate of 93%. But it's the remaining 7% who are of concern. Earlier this year, doctors at a hospital in Stockholm alerted Swedish authorities after reporting 37 cases of unwanted pregnancies among women who were relying on the app for contraception. A prospective observational study of 22 785 women was published in *Contraception* in 2017.

WHAT DO THE EXPERTS THINK?

Sarah Hardman, director of the Faculty of Sexual and Reproductive Healthcare's clinical effectiveness unit in Edinburgh, has urged caution. While acknowledging the substantial size of the study, she argues it was self selecting, as it included lots of women who were looking for something different for contraception, and who may have been more motivated than the "average woman on the street."

SO SHOULD THE AVERAGE WOMAN STEER CLEAR?

Not necessarily. But as Raoul Scherwitzl, *Natural Cycles*' chief executive, acknowledges, "our users do tend to be highly motivated." He said the app's typical users are aged 30, in a stable relationship, and engaged in a regular daily routine. Perhaps most crucially, they are also prepared to take their temperature every day, and use protection on fertile days.

Gareth Iacobucci, *The BMJ*

Cite this as: *BMJ* 2018;361:k2019

Neurologist's 2500 patients are recalled over concerns about diagnoses and care

All 2500 patients of a consultant neurologist in Northern Ireland have been recalled amid concerns about his diagnoses and treatment plans, in the biggest patient recall ever in the province.

Michael Watt, who specialises in stroke, Parkinson's disease, and multiple sclerosis, is a senior consultant at Royal Victoria Hospital in Belfast. He also practised privately.

"Other doctors raised concerns with the trust regarding the care and treatment provided by Michael Watt to a small number of patients," said Mark Mitchelson, medical chair of division at Belfast Health and Social Care Trust.

The trust reviewed patients' notes and recently received the results of an independent review by the Royal College of Physicians, which sparked

the recall. Watt has not seen any patients since June 2017 in either the NHS or the private sector, although he remains an employee of the trust.

An advice line has been set up, and nine consultants will be running 200 additional clinics starting on 5 May. The trust said that it intended to see the patients, some of whom are as young as 14, in the next 12 weeks.

Significant anxiety

"I fully understand this will cause significant anxiety to many patients and their families, and for that we are truly sorry," Mitchelson added. "The recall of such a large number of patients is so that we can be confident and thorough in ensuring that patients are having the best possible care."

Watt qualified in 1985 at Queen's University Belfast and has been

on the GMC specialist register for neurology since 1996.

Since news of the recall emerged, patients of Watts have written glowing reviews on the iWantGreatCare website. One wrote, "I have always found him to be extremely knowledgeable and professional, and I'm saddened to hear this news today. Got my letter this morning, and I DON'T WANT ANOTHER NEUROLOGIST. Sorry, but I trust this Dr implicitly."

Another patient wrote, "If he made a mistake (hopefully he didn't), he made many excellent decisions and helped so many. Thank you Dr Watt. God bless you."

A third commented, "He is really caring and truly listens when explaining different symptoms. I would recommend him 1 million

An advice line has been set up, and nine consultants will be running 200 additional clinics



QOF is "unlikely" to disappear in England but could be slimmed down

The Quality and Outcomes Framework (QOF) is "unlikely" to disappear in England but could be drastically slimmed down, the vice chair of the Royal College of GPs has said.

NHS England and the BMA's General Practitioners Committee (GPC) have been engaged in a major review of QOF, to examine whether to retain, reshape, or phase out the incentive system. Changes to GPs' contracts were expected this year, but could now occur in 2019-20.

Speaking at the Londonwide LMCs conference on 2 May, Martin Marshall (right), the RCGP's review group representative, said it was "very

unlikely" that England would follow Scotland in abolishing QOF. But he said the review was considering shrinking QOF from 8-10% of practice income to a smaller amount and redeploying funding to quality improvement programmes. This would give GPs more flexibility to provide support in specific areas such as obesity, he said.

Marshall acknowledged some GPs may be reluctant to see QOF change because of the administrative upheaval and concern about loss of income. But he said practices should consider the merits of

reducing the number of indicators, which he argued could reduce bureaucracy

and improve patient care. "I understand those arguments for keeping QOF as it is, but we do have an opportunity to think differently," he said.

"One year, a practice might start working on childhood obesity, with a range of partners, in a quality improvement programme, and they just get paid for doing that work. It wouldn't be a tick box outcome. That seems a more sensible way of taking the system forward, if GPs are willing to take the shake-up that would require."

Richard Vautrey, GPC chair, said, "The review will produce a report that could describe a range of options, that will inform, but not determine, any future negotiations."

Gareth Iacobucci, *The BMJ*

Cite this as: *BMJ* 2018;361:k2010

Scotland has more medical students from poorer homes

Scotland's medical schools have been praised by the GMC for their efforts in attracting more students from disadvantaged backgrounds to train as doctors.

There has long been concern that the majority of applicants to medical school come from the wealthiest backgrounds, and the GMC has recognised the attempts being made in Scotland to widen access.

All five Scottish medical schools participate in the Reach Scotland programme which gives information, advice, and guidance to school students from the most deprived communities. This includes taster sessions, student experience days, and support in preparing applications.

The University of Glasgow has more than doubled the number of students entering medicine from the





times over!! He is a truly fantastic Dr and person.” But Melissa McCullough, a non-executive director for the Health and Social Care Board of Northern Ireland, told the *Belfast Telegraph* that she had made a formal complaint to the trust as long ago as 2011 after Watt gave her a diagnosis of multiple sclerosis in 2010, when she actually had neurological Lyme disease.

Mitchelson told the BBC: “These are patients with a wide range of neurological conditions, some of which are debilitating, complex, and significantly serious. But standards did dip around one consultant, and patient safety should always be paramount. Hence the recall.”

Clare Dyer, *The BMJ*

[Cite this as: *BMJ* 2018;361:k1958](#)

target schools it is working with on the programme. While the numbers are still small, they have increased from 18 students in 2007-08 to 38 in 2017.

Glasgow School of Medicine runs a summer school to boost the skills of potential students and a pre-medical school course which guarantees entry following successful examinations. More than a fifth of its intake of 1326 medical students now come from disadvantaged backgrounds.

First to be accepted in five years

The Reach programme was crucial in helping Alison Holden secure a place studying medicine at Aberdeen. “Nobody from my school had been accepted for medicine in five years and this made the task of getting in seem even more impossible,” she said. “I attended Reach events which supplied me with so much information on applying. I was also given the opportunity of going on a work experience placement where I got to meet real patients. I can’t emphasise enough how much Reach has helped.”

The GMC’s director of education and standards, Colin Melville, said:

“Medicine needs to celebrate the contribution from students from all social backgrounds, and encouraging people from under-represented groups to consider a career as a doctor is hugely important. Scotland, like the rest of the UK, should have a diverse workforce, so it is vital medical schools engage in ways to widen participation in medicine.”

The comments are contained in a GMC review of medical education and training in Scotland carried out through a series of visits last year. It is generally positive but does highlight worries around rota gaps, access to IT equipment, and the consistency of assessments for students.

It also warns of the risks of doctors in training being put in situations where they feel they are expected to work beyond their competence. It welcomes a system of coloured name badges, being used at Victoria Hospital in Kirkcaldy, which allows all staff to identify different levels of competence. While this is a local initiative, the report says there is a need for a consistent approach across the health service in Scotland.

Bryan Christie, Edinburgh

[Cite this as: *BMJ* 2018;361:k2002](#)

FIVE MINUTES WITH . . .

Samuel West

The founder and curator of the Museum of Failure says we need to flaunt failures to learn from them

“Failure is inherent to the research process—observing results and then continuing with iterations to make progress. But the problem is that failure isn’t automatically communicated with the outside world. Even within the research community, where failure should be a given, publication bias means there is a huge problem with discussing and accepting failure.

“The Museum of Failure is a collection of innovations that failed, which is defined as deviating from a desired or expected outcome. I set it up to stimulate discussion and find a new way to disseminate research findings. Stumbling on the Museum of Broken Relationships in Zagreb gave me my eureka moment. I could create a museum to spark interest in research, as part of my own research and work in helping organisations create a climate for innovation and organisational creativity.

“Since opening in Sweden last year, interest has exploded. There is a second museum in Los Angeles, and a touring exhibit is now going around the world.

“The museum’s healthcare innovation failures include the NHS IT programme, the largest civilian IT project in the world and also its largest failure. One of the reasons it failed was because it gave very little consideration to end users. Another healthcare failure was

Exubera, an inhaled insulin developed by Pfizer at an estimated cost of \$2bn (£1.5bn). It failed because it was too cumbersome for patients to use.

“Each failure fails in a unique and fantastically interesting way. The stories behind each failure are what educate us. Failing within healthcare is a particularly sensitive issue. It’s about being willing to test new ways of doing things and new technologies, without risking patient safety. All the fancy models for innovation don’t get over the problem of people being blocked by a fear of failure. It’s not just individuals, it’s teams and whole organisations. You don’t change a culture overnight but we need to change the mentality—when dealing with uncertainty and ambiguity, we need to accept failure.”

Susan Mayor, London [Cite this as: *BMJ* 2018;361:k2013](#)



“THE STORIES
BEHIND EACH
FAILURE
ARE WHAT
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“The breast screening programme mostly causes more unintended harm than good”

Susan Bewley,
King's College,
London



Breast screens: fatal error or lucky escape?

As a cohort of older women missed out on mammography invitations, **Nigel Hawkes** looks behind last week's headlines



Jeremy Hunt told the House of Commons that 270 women may have had their lives shortened by the IT error

? How was the error found?

Public Health England (PHE) says it spotted anomalies when analysing data from the AgeX trial, a cluster randomised trial run from Oxford University to investigate the benefits and risks of extending screening to younger and older ages. “The numbers randomised to screening in the older group were too low,” a PHE spokesperson said.

Every year 350 000 women ought to receive invitations to screening, but over the previous nine years, the average had fallen short by 50 000—the 450 000 missed invitations quoted by Jeremy Hunt in parliament on 2 May.

? What caused it?

Nobody's saying. Hunt blamed IT system failures, including “how age parameters are programmed into the system.” One suggestion is that the cut-off had been set at 70, not 71, thereby excluding women who had not yet reached their 71st birthday and should have been included. PHE didn't confirm this to *The BMJ*, and instead blaming “several different IT issues.”

? How many extra deaths have occurred as a result?

Hunt said that PHE modelling indicated that between 135 and 270 women had had their lives shortened. A calculation by David

Spiegelhalter, Winton professor of risk at the University of Cambridge, reached roughly the same conclusion. The screening programme claims that one in 1400 women has an early death prevented per screen. Dividing 450 000 by 1400 equals 321, but only 70% of women would have gone to the screening if they had received the invitation, and 70% of 321 is 225, within Hunt's bracket.

Others are more sceptical. Paul Pharaoh, professor of cancer epidemiology at the University of Cambridge, says that Hunt's estimate amounts to not much more than hand waving. “We have little good evidence of the benefit of screening in older women,” he says. “And there is no evidence at all of how much benefit or harm is associated with a single screen at the end of screening an individual for 20 years—in other words, the effect of missing this screen is unknown.”

? Are there any benefits from not being screened?

Yes. In older women screening is more likely to detect ductal carcinoma in situ, leading to biopsies and operations that aren't needed. As many as 800 women may have been spared this as a result of not being screened.

? Why did it take nine years to spot the missed appointments?

The numbers for each year were divided between 79 screening units, and women of all ages between 50 and 70 pass through them. A unit of average size would have seen only

a dozen fewer women a week in the 68-70 age group, a shortfall that would not necessarily have been obvious.

That said, some trusts did report lower than expected numbers in March 2017, which were investigated and dismissed, PHE says, after the IT contractor Hitachi Consulting said that they were a local issue. Hitachi contests this, saying that it passed on concerns but PHE failed to act.

? Would the missed screen have made much difference?

Not necessarily. The system works on a three year cycle, so some women will have their last mammogram at 68, some at 69, and some at 70.

? What will happen to the women who missed appointments?

PHE has promised to contact those still alive (309 000, according to Hunt) by the end of May, to provide mammography to all who want them by the end of October. Extra capacity is being identified so routine screening will not be affected, says PHE.

? Is this possible?

There are doubts. Caroline Rubin, vice president for clinical radiology at the Royal College of Radiologists, says: “This does mean that breast screening units across the country may have to arrange additional appointments for thousands of missed patients, which will undoubtedly put even more strain on units that are already stretched to the limit owing to staff shortages.”

? Should the women be screened?

No, they should look this gift horse in the mouth and carry on with their lives, says Susan Bewley, professor of women's health at King's College, London, and 14 co-signatories in a letter to the *Times*. "The breast screening programme mostly causes more unintended harm than good, has no impact on all cause mortality, and claims of lives 'saved' are counteracted by deaths resulting from interventions," they say.

? How have women reacted?

The emergency phone line set up for worried women (0800 169 2692) had more than 8000 calls on its first day, and many others were unable to get through. Peter Walsh, chief executive of Action against Medical Accidents, said that communication had been poor.

"These women should not have had to find out about this through the media," he said. "They are now faced with waiting to see whether they receive a letter telling them they are one of those affected. That is a dreadful position for anyone to be in."

? Are there legal implications for the government?

Leigh Day, solicitors specialising in medical negligence, think that the damages could run into millions. But proving the case will not be easy.

? If the benefits are equivocal, why should there be damages?

The government and the breast screening programme are victims of their own rhetoric. Having claimed that breast screening saves lives, they cannot now argue that the benefits are more nuanced or even non-existent.

Some media outlets are upping the ante by calling the errors a "calamity" or a "national tragedy." The *Daily Record* called for Hunt's resignation even though none of its readers were affected—it is a Scottish paper. Hunt's penitent tone in the Commons, though sensible for public relations, lends support to the idea that this is a truly dreadful event. Seldom have the medical authorities been so elegantly hoisted by their own petard.

Nigel Hawkes, London

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NEWS ANALYSIS

Scrap the cap: pressure mounts to allow more foreign doctors into UK

Why are clinicians from overseas being denied visas when hundreds of NHS posts lie vacant? **Ingrid Torjesen** reports

The cap on the number of health professionals from outside the European Economic Area allowed to work in the UK is coming under increasing pressure.

Twelve royal colleges, the BMA, and NHS Employers have called on the home secretary, Sajid Javid, to allow more doctors to secure one of the 20 700 tier 2 (general) certificates of sponsorship awarded each year to people recruited to all sectors from outside the EEA.

The Labour Party went further and said that all NHS workers should be exempted from the tier 2 visa system and an alternative system be put in place. And the GMC has called on the government to tackle delays in issuing visas.

All these organisations agree the visa cap is contributing to gaps in hospitals' rotas, lengthening patients' waiting times, and threatening the care and safety of patients.

Frustrating

Charlie Massey, the GMC's chief executive, said, "It is frustrating that while one government department [the Department of Health and Social Care] is working hard to recruit doctors to an overstretched health service, another [the Home Office] is enforcing eligibility conditions."

He said more overseas doctors were taking the exams needed to work in the UK but that the visa cap was stopping them getting NHS jobs. "The government needs to address this issue as a matter of urgency."

The limited tier 2 certificates are first offered to applicants for jobs in sectors with staff shortages. Any remaining certificates are then allocated according to the points an application accrues, with priority given to jobs that require a PhD level degree and those with high salaries.

All nursing jobs are considered shortage occupations, but only some medical practitioner

posts in emergency medicine, psychiatry, paediatrics, and radiology qualify.

In April the tier 2 cap was reached for an "unprecedented" fifth month in a row. NHS Employers is aware of at least 400 doctors who have been unable to take up posts since December 2017, and some doctors have been rejected repeatedly because of the visa rules.

"Unprecedented" demand

Nottingham University Hospitals NHS Trust told *The BMJ* that it had appointed 18 non-EU doctors since December 2017 but they had been unable to take up their posts because their certificates of sponsorship were refused. Seven have been refused more than once, and two have been refused three times in a row. Two doctors have now decided not to take up their job offers.

Jane Dacre, president of the Royal College of Physicians, wrote to the prime minister on 2 May after calls to relax the visa rules were vetoed. "I would greatly welcome clarification of the reasoning behind this decision, particularly given the need for more doctors to ensure safe staffing levels for patient care," she wrote.

In the letter to Javid the royal colleges and the BMA proposed "to retain the current cap on restricted certificates of sponsorship for the short term but to exclude applications for shortage occupation roles." This, it said, "would prevent a crisis in the recruitment of NHS nurses and work for both employers and government in the short term while the UK navigates through complex Brexit negotiations."

There is no indication whether its plea will lead to action. In February seven royal colleges, NHS Employers, and the BMA wrote to the then home secretary, Amber Rudd, to highlight the effects of the cap on recruitment, but they have not received a response. They warned that increased demand for tier 2 visas from non-healthcare sectors, such as IT, meant fewer slots were available for doctors and pharmacists.

Danny Mortimer, chief executive of NHS Employers, said, "This prolonged inability to recruit non-EEA talent hits us particularly hard—and therefore hits patients hard too. We are also aware that our overall demand for visas is adversely impacting on other parts of the economy."

Ingrid Torjesen, London Cite this as: *BMJ* 2018;361:k2009



Charlie Massey: the visa issue has to be tackled as a "matter of urgency"



Sajid Javid: has been asked to allow more doctors into the UK

WIKTOR SZYMANOWICZ/REX





THE BIG PICTURE

Health in a bar of soap

Chanthou teaches her children Sovannreach, 7, and Narong, 3, how to wash their hands after receiving soap from Tuol Snoul Health Centre, in Cambodia.

The family are part of a project developed by global health charities WaterAid and PATH aimed at encouraging governments to combine clean water, decent household toilets, and good hygiene with routine childhood vaccinations and nutrition support. Such schemes could potentially save the lives of up to 697 000 young children a year, according to new research from the charities.

It shows that such measures could prevent billions of harmful bouts of diarrhoeal illness which kill 500 000 under 5s each year. More than half of such deaths are directly related to dirty water, poor sanitation, and poor hygiene. Even those who survive are left weakened and sometimes stunted, their long term development and education compromised.

Margaret Batty, WaterAid's director of global policy and campaigns, said, "If children are to thrive they need clean water, good sanitation and hygiene alongside good healthcare, vaccinations and good nutrition. As the World Health Assembly in Geneva approaches [20-26 May], we are calling on world leaders to ensure that whenever they invest in health and nutrition, they also invest in water, sanitation and hygiene. They can save so many lives by combining these efforts."

Alison Shepherd, *The BMJ*

Cite this as: *BMJ* 2018;361:k2045

Restoring biomedical literature with RIAT

Free support and grant funding are now available to authors wanting to correct the record

Clinical trials are arguably medicine's most powerful methodological tool for providing evidence on the effects of healthcare interventions. But for all the promises of evidence based medicine, the problem of publication bias from unpublished trials threatens to undermine the enterprise. And over the past decade, a growing body of research has shown that trial publications—even those in the world's most prestigious, peer reviewed journals—cannot be taken at face value.¹⁻⁶ Journal articles may inaccurately reflect both the study's design and the data collected. Incompleteness and inaccuracy of the public record is a delicate ethical issue since clinical trials are experiments on humans. Whether intentional or not, these problems can cause harm to people and waste public resources.⁷

Noting these problems, in 2005 *The BMJ*'s former editor, Richard Smith, suggested that journals were no longer the ideal vehicle for reporting trials; regulated websites would be better.⁸ Three years later, the ClinicalTrials.gov registry opened its results database, and US law requires that all applicable trials report their basic results, including all prespecified primary and secondary outcomes and certain adverse events. However, although registers can hold more comprehensive information than journals,⁹ compliance with reporting requirements remains inadequate.¹⁰ Various mechanisms now exist for third party access to large unabridged study reports of industry sponsored trials, allowing researchers to assess trials as regulators do.^{11 12}

Restoring trust

But the reality is that journal articles—not independent analyses of underlying trial data—remain the backbone of the evidence relied on for clinical decision making. And so long as this remains true, restoring trust in what is published remains vital for the progress of science and healthcare.

Restoring trust in what is published remains vital for the progress of science and healthcare

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Mark Jones, statistician, University of Queensland School of Public Health, Brisbane

Tom Jefferson, senior associate tutor, Oxford University Centre for Evidence Based Medicine

We launched the Restoring Invisible and Abandoned Trials (RIAT) initiative in 2013 to tackle the problems of trial invisibility and distortion that damage the biomedical literature.¹³ The RIAT concept posits that when investigators and sponsors abandon trials, either by not publishing or by refusing to correct demonstrable errors in a trial publication, third parties that have obtained the underlying trial data are free to publish and correct the record.¹³

The basic ingredients of the initiative are simple: restorative authors (those wishing to correct the record) access underlying trial documents and data, and analyse it following the original trial protocol. Authors then draft a manuscript reporting the trial and submit them to a journal for publication.

During peer review and, importantly, after publication, restorative authors are expected to make all underlying data, sufficiently de-identified, available electronically. *The BMJ* and *PLOS Medicine* were the first journals to endorse RIAT.¹⁴ Four more journals have followed, and others have expressed a willingness to consider RIAT manuscripts for publication.¹⁵

But four years on, only a few RIAT teams have carried out trial restorations.¹⁶⁻¹⁸ Despite some notable successes—for example, republication of the infamous paroxetine Study 329¹⁷ and first publication of a four decade old study of a morning

sickness drug¹⁸—the reality is that few people know how to access underlying trial data, and even fewer have the time to carry out a reanalysis.

New support

To energeise this movement, the Laura and John Arnold Foundation has provided \$1.4m (£1m) to fund the RIAT Support Center under our stewardship. The virtual support centre (www.restoringtrials.org) aims to assist researchers who would like to restore a trial by providing free support and is open to people worldwide. We will help verify the need for restoration by ensuring trial abandonment is properly documented. Because third party access to complex trial data is still in its infancy, we will also provide advice on the scope and granularity of data needed for restoration and help restorative authors obtain data.

The centre aims to raise awareness of misreporting or invisibility of clinical trials and to improve knowledge of publication and other reporting biases. We will develop systems to quickly identify misreported and unpublished trials that have the potential, if restored, to have a large effect on medical or public health practice. It will also administer grant competitions. In the first, up to \$150 000 will be awarded to researchers wishing to correct a misreported trial or publish a completed unpublished trial. Applications will be adjudicated by an external panel of judges.

We welcome feedback and contributions from clinicians, researchers, and the wider public. Important questions remain, including how we rapidly identify affected trials and how we develop a legal and ethical framework for publishing underlying clinical trial data alongside restored trials. If you have technical skills or wisdom to share, please get in touch at support@restoringtrials.org.

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FIONA BLAIR

Preventing violent crime

Partnerships between health, education, social, and police services are essential

The recent surge in killings in London has created public outcry. The Metropolitan police are investigating 55 murders so far this year. There have been welcome calls for a “public health approach” to tackling violent crime.¹ But what does that entail?

Public health has a role in identifying risk and protective factors, monitoring and understanding the changing threat of violence, and supporting the development of a robust evidence base around what works for prevention and control.²⁻⁴

The public health lexicon describes primary, secondary, and tertiary prevention. In criminal justice, these translate to preventing violence, controlling or reducing violence, and rehabilitating or reconciling individuals and communities after violence has occurred.⁴ A life course approach to prevention is also useful—through early years family support, parenting skills training, and youth support programmes.²⁻⁵ Adverse childhood experiences influence criminal behaviour as well as mental and physical ill health in later life, and are of growing importance in formulating preventive strategies.⁶

Multiprofessional, multiagency partnership is critical to preventing and controlling violence, including sharing data, in real time. In Cardiff, a violence prevention board translates data from emergency services into practical prevention measures that have helped reduce the incidence of violence by 40% since implementation in 2001.⁷ This model has been adopted by many UK cities and is in the government’s serious violence strategy.⁸ Other data driven partnership interventions include programmes in Cali (Colombia) and Chicago (US).⁹ There has been renewed interest in the partnership work through the Scottish Violence Reduction Unit¹⁰ and the Boston model, “Operation Ceasefire,” from



GETTY IMAGES

which it was developed.¹¹ A strong partnership with affected communities is also important, addressing victims’ needs, the fears of the community, and the rehabilitation of offenders.¹⁻¹²

The surge in gun and knife crime in England and Wales is being driven at least partly by changes in the illicit drugs market. The prevalence of illicit drug use remains stable, but we are seeing rapid evolution of psychoactive drugs, fentanyl as a newer drug of misuse, and a rise in the use, and purity of crack cocaine.^{8,13} Suppliers are increasingly reaching beyond their urban bases to other towns and rural areas, recruiting young or vulnerable people to help store and supply drugs or move cash (the “county lines” distribution).¹⁴ This is bringing new drugs, new violence, new human trafficking, and new drug related deaths and harms to places not previously in the headlines.

Many supportive public services have been lost or reduced; police budgets have been cut, as have public health budgets,¹⁶ forcing difficult funding choices around community, early years and youth services.¹⁷

What should happen now?

The government’s recent serious crime strategy⁸ emphasises prevention and recognises the need to identify individual and societal risk factors for violence. Effective partnerships are needed that link education, policing, local authority,

Effective partnerships are needed that link education, policing, local authority, health, and social services

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COMMENT, p 194

health, and social services. The National Consensus for Policing, Health and Social Care demonstrates this resolve.¹⁸

Police forces should prioritise disruption of markets and trafficking.⁸ People with drug problems need access to services with harm reduction, reducing chaotic behaviours, and normalisation of life as central aims.¹⁹ Services for early intervention with children and families should be reinstated and expanded with public health budgets to fund them.^{17,20}

Finally, we must ensure continuing UK involvement with agencies such as Europol and the European Monitoring Centre for Drug and Drug Addiction, to help maintain and develop international drug and crime surveillance and control.¹³

Internationally, the WHO’s INSPIRE is a promising package of evidence based approaches.³ It targets violence against children through laws to criminalise violence, reduce alcohol misuse, and control access to arms; supporting parents and carers to foster positive attachments; improving families’ economic security; and developing children’s social, emotional, and life skills. The UN sustainable development goals specify violence prevention targets within a framework that tackles poverty, inequalities, and protects human rights. As violence seeps through the internet, tackling these drivers in low and middle income countries must be a priority.³

The primary prevention of violence, as for the prevention of ill health, requires policies to reduce inequalities in wealth and opportunity.²¹ The London killings starkly show how we are failing young people in the UK. Our neglect has led to them becoming susceptible to sexual exploitation, extremism, and gangs. We need to develop a shared vision of a better future for, and with, our young people.

Laurence Buckman, GP partner, London
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If we admit that GPs become less safe the longer they work, we could harm the profession. However, the 10 minute consultation is too short for the amount of work required to meet patients' needs. And the pressure to perform better and longer for more and more patients, with greater degrees of complexity, is now dangerous—for them and us.

The time has come when the public has to be told that it is unsafe for them to be seen when the GP is not thinking optimally, and that tired GPs risk harming patients—and themselves through stress associated illness. I am not prepared to die for the NHS.

The first medical commandment is to do no harm. We must no longer squeeze what needs to be done for patients into 10 minutes. We must stop pretending that we can see potentially unlimited numbers of possibly sick people without respite. We must support the BMA's recent call to limit the daily number of consultations.

No limit for genuine emergencies

Of course, we should not have a limit for genuine emergencies, but fortunately these are rare. Most so called emergencies are for minor ailments, certificates, insurance forms, or simple queries, and none of these justifies working into the evening.

Most practices triage their excess workload to allow patients with emergencies to be seen while controlling the deluge of people with problems who are less sick or not sick at all. Every problem is important to every patient, and we should recognise that, but we cannot keep on giving until we might make a potentially serious error or become ill ourselves through overwork. And often the last patient we see is the sickest of all, or a child with anxious parents, who need all our skills.

My day as a GP principal (partner) is typically 12-14 hours long. I know

We cannot keep on giving until we might make a serious error or become ill ourselves

sadly that I do not think as quickly or as laterally at the end of the evening as at the beginning of the day. Like many practices we start out with a "fixed number" of appointments—18 surgery consultations in each half day—but we also have a policy to turn away nobody who says he or she is in need. We cope with this load. What crushes us is the bureaucracy (repeated referrals for the same problem, obstructive referral management systems, and form filling) not the (largely understandable) demand from patients. But by the time I get home the compassion well has nearly run dry.

GPs must act

Limiting your workload is the sign of a professional, and GPs now need to act. However a practice triages—by phone (which is easier but still requires concentration to avoid mistakes) or in person—the total number of interactions needs to be limited to safe levels. Many GPs stop at two hours a session (about 12 patients) to ensure they have enough time to enter data and think about care. This often creates long waits for patients to see a GP.

My generation can still turn it on and keep going until the last straggler has been seen, but perhaps the time has come to stop doing so. We have to engage with a debate that understands that limiting access on safety grounds also risks criticism that we turn away a sick person.

We do not want to open GPs up to more attacks about lack of availability. We must collectively tell patients that there are not enough of us, and there are too many of them. We have tried a host of manoeuvres to control demand (notices in surgeries, local and distant triage, and trying to reduce NHS bureaucracy) but they have not held back the flood.

We have to tell those who turn the tap that only so much water will go under the bridge today, for their safety and ours. Politicians must also be honest with their voters—we have run out of doctors and time.

HEAD TO HEAD

Should GPs' daily number of consultations be capped?



Limits to workload could protect GPs and patients in a system that has become dangerous, says **Laurence Buckman**, but **Michael Griffiths** says arbitrary restrictions inhibit professionalism and autonomy, and might even cause harm

no

We need discretion and additional resources to control our workload

Michael Griffiths, GP partner, Caerphilly
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General practice is a tale of the unexpected. You never know what's coming next. But this has become less true since the 2004 General Medical Services (GMS) contract, which formally added management and prevention of chronic disease to our traditional role of caring for "people who are ill or who believe they are ill."

The ability to hand back responsibility for out-of-hours care and the limitation of the "normal" working day were partial recognition of the additional workload that this more proactive approach to patient care implied. Unfortunately, successive governments and management regimes have gradually transferred more work into this GMS funded envelope—through under-resourced or unresourced movement of care out of hospitals; the extension of clinical governance with onerous inspection regimes; the bureaucracy that surrounds appraisal and revalidation in England (and to a lesser extent in Scotland and Wales); and increasing demands for information. This has left the profession feeling overwhelmed by the excessive workload and compromised patient safety.

Limits flexibility

The unresourced work that is being diverted our way needs to be limited, and one of the ways proposed is to cap the number of consultations a GP can have during a normal working day. This is the wrong way, partly because it limits our flexibility and professionalism when dealing with patients, but mainly because it does not address the question of bringing additional resources into primary care to manage work that we could undertake if properly funded.

Let us imagine a limit of 30 patient contacts in a working day (equivalent to 12-13 minutes per consultation using the old 1990 contract's "red book" guidelines for administrative time). I can see 20-30 patients with upper respiratory tract infection easily in a morning surgery and be ready for more. The trick here is not to miss the early meningitis, pneumonia, or strep throat that may lead to sepsis; so there is a limit, but these are generally 3-5 minute consultations.

But what happens if the 31st patient has chest pain, or is depressed, and leaves surgery so upset by our contractually enforced rejection that he or she attempts suicide? They may not announce themselves as an emergency. Can we really turn them away and call ourselves professional?

Also, we are encouraged to employ other practitioners to manage minor illness, leaving only the more complex cases for the doctor. A morning of psychosocial problems such as the patient who cannot pay the "bedroom tax" and is threatened with eviction; the parent whose child is not performing as expected at school, who wants an assessment for autism or attention deficit hyperactivity disorder; or the mother of five children who is being emotionally and physically abused leaves me emotionally drained. After 10 such cases, I may feel that it is unsafe to continue, but I could be contractually obliged to see a further 20 patients. A cap could become an expected level of work.

Loss of access and professionalism

In reality, our days are not so clear cut, and we see a mixture of such cases alongside our patients with asthma, diabetes, or hypertension, whose control is such that our nurses feel they should see the doctor. We need the discretion to control this workload—and additional resources that we can call on when we have reached our personal limits. We need the flexibility and the professionalism to decide where these limits lie and support from primary care organisations and government to do this.

We do not need an arbitrary cap. Proposing such a cap may be a useful negotiating tool when arguing for extra resources to manage growing workload, but it should never become an end in itself. That way lies loss of patient access to their GP, loss of professionalism on the part of the GP, and a risk of missing something that is at least as great as continuing to work when fatigued.

What is needed is a greater proportion of NHS resource coming into primary care to enable us to administer our practices properly, allowing the right professional enough time to devote to each patient without feeling exhausted at the end of the day.

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General practice needs radical reform, not tweaks such as consultation caps

Calls to limit the number of patients a GP can see a day is tinkering with a system that needs a new long term strategy, says **Jennifer Skillen**



My son and I have the connective tissue disorder Ehlers-Danlos syndrome. He also has autism spectrum disorder, and I have hypothyroidism and osteoarthritis. So we're both frequent users of primary care.

Our surgery has responded to the national shortage of GPs by introducing what patients call "double triage" when we phone to make an appointment. First we are triaged by the receptionist and then we wait at home for the GP to phone us.

Sometimes only a face-to-face appointment is suitable—a GP can't feel or hear the crepitus in my joints or see how swollen and red they are down the phone—and double triage seems to have helped me to see a GP more quickly. It may decrease the number of face-to-face appointments for the GPs, but it hasn't decreased the overall contact they have with patients.

Patients, of course, want safe healthcare. A cap on the number of patients a GP sees each day, as advocated by Laurence Buckman (see page 180), might result in safer working for doctors. But if it reduces the total number of appointments available for patients it might not be safer for us. Arguably, for some patients, no appointment is even less safe than a hurried appointment with a GP who's already been working for 10 hours.



We should look to international models that could transform primary care and make it safer for patients and GPs alike

A fifth of patients are already having to wait more than two weeks for an appointment, which is too long. But simply introducing caps to the number of daily consultations would likely make this unsafe situation even worse. We'd also need extra clinics. But where would the extra GPs come from? It would take massive extra funding, and it takes 10 years to train a GP.

Deckchairs on a sinking ship

Capping appointments is like moving the deckchairs on a sinking ship. What the NHS needs is fundamental system change, not sticking plasters. We should look to international models that could transform primary care and make it safer and better for patients and GPs alike.

Consider the Nuka model developed by the Southcentral Foundation in Alaska. The patient is at the centre of, and considered part of, a team that can include not just a GP but also a nurse practitioner and other professionals. A team manager is the patient's point of contact. Teamwork supports GPs by spreading the workload, and this approach encourages continuity of care. This is very different from primary care in most of the NHS, but with some adaptation it is now working at sites in Wales and Scotland.

Our surgery has employed an advanced nurse practitioner,

a clinical pharmacist, and a social prescriber. This may have helped make it easier to get an appointment, but it may not be with our GP, which sometimes is not ideal.

Patients really value continuity of care, and a cap of, say, 30 appointments might mean that if you are the 31st patient that day you have to go elsewhere or wait for another day. I'd worry if my son and I had to see an unknown GP or community health professional in an overspill clinic, decreasing our continuity of care further.

Worry lines and grey hair

Patients understand the pressures that GPs are under. We are concerned for our GPs' wellbeing, especially when we've known and trusted them for many years. We see the worry lines and the grey hair, and many of us mourn when our GPs retire early because they've had enough.

The current situation isn't fair to GPs—and neither is it fair to patients who pay for and rely on the NHS. The answer must include radical reforms to primary care. These must increase the number of appointments available to patients while reducing GP workloads. We must look beyond short term tweaks and develop long term strategies in the NHS that support GPs to support patients.

Cite this as: BMJ 2018;361:k1962

Hormone disrupting chemicals: the slow progress to regulation

Substances such as phthalates may harm humans but remain ubiquitous in manufactured goods.

Barbara Casassus reports on what is happening in the EU to curb their use

What are endocrine disruptors?

Some 800 chemicals are known or suspected to interfere with hormone receptors, synthesis, or conversion at some dose. These endocrine disrupting chemicals (EDCs)—for example, phthalates and parabens—are present in scores of consumer goods, including toys, food, pesticides, personal care products, and almost all plastics. Only a fraction have been investigated for evidence of harm to human and animal health. A few have been banned: bisphenol A in products for infants in Europe, the US, and Canada; and some parabens in cosmetics in those countries and Japan. France bans bisphenol A in materials that come into contact with food.

Who is worried?

Last month, partly in response to 19 public petitions, the European Parliament held a hearing. Many health and environmental experts are also alarmed by the slow progress identifying and prohibiting harmful substances. EDCs are high on the political agenda in Belgium, France, Denmark, and Sweden, says Pavel Poc, vice chair of the parliament's environment, public health, and food safety committee.

How serious is the threat to health?

Evidence about the long term health effect of low exposure is “overwhelming,” Barbara Demeneix, an endocrinology researcher for the French National Science Research Centre (CNRS), told *The BMJ*. Research links EDCs to cancer, obesity, thyroid and neurodevelopmental disorders, infertility, and reduced IQ, she says.

A 2013 UN and WHO report described “a global threat” from

“an increasing burden of disease across the globe in which EDCs are likely playing an important role, and future generations may also be affected.” The health costs of a limited number of EDCs in Europe have been estimated at €163bn (£140bn) a year, says Natacha Cingotti, senior chemicals and health policy officer for the non-profit making Health and Environment Alliance in Brussels. The real cost is greater, she says, and will “continue to rise sharply unless urgent action is taken.”

Do the experts agree?

No. One who disagrees is Daniel Dietrich, a toxicology researcher at the Konstanz University in Germany. He says this cost estimate is “highly speculative” and based on flawed research. At the European Parliament in March he said, “Synthetic EDCs at the present exposure are no risk for human health,” compared with natural endocrine disruptors such as sugar.

Is regulation coming?

In 2009 the EU pledged to identify EDCs in pesticides that might warrant a ban. It set a deadline of December 2013 for the European Commission to draft criteria for identifying such substances. The commission missed the deadline, so Sweden took it to court and won. The EU finally agreed criteria in December 2017. This has not placated scientists: “The bar [for proving substances are EDCs] is too high, and the approach is too narrow to protect health,” says Cingotti. She fears that draft guidance due in June for applying the criteria could fail. And myriad other products are yet to be considered.

“The bar is too high, and the approach is too narrow to protect health”

Natacha Cingotti, Health and Environment Alliance

Is industry lobbying against regulation?

Lobbying has been strong because EDCs are used in many manufacturing sectors, says Nina Holland, a researcher at Corporate Europe Observatory, which campaigns to restrain business influence over EU policy. The observatory has emails from industry to the commission that cast doubt on harms. “The commission justifies its hesitation by saying there is still scientific controversy,” Holland says. “This is just an excuse to delay action. All endocrinology societies agree that EDCs, and particularly mixtures, are dangerous to health.” The European Chemical Industry Council, a trade organisation representing 670 members and affiliates, denies obstructing regulation. “The chemical industry has always been in favour of clear science based criteria” for identifying EDCs, it told *The BMJ*.

What will happen next?

The European health commissioner, Vytenis Andriukaitis, said last July that the commission would devise a new strategy for hormone disruptors to go “beyond pesticides,” covering, “for example, toys, cosmetics, and food packaging,” but he gave no publication date.

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Bitcoin technology could take a bite out of NHS data problems

Blockchain recording of digital transactions could have many healthcare applications, from patient records to tracing pills—but, asks **Stephen Armstrong**, is its potential overhyped?

The cryptocurrency boom may be over, according to recent reports, but interest in its underlying technology, the blockchain, is far from it. Digital health experts are starting to wonder if blockchain could solve NHS data problems, and the UK's first trial of blockchain technology to create and support electronic health records will begin in July at a south west London general practice group (box).

Blockchain technology was invented in 2009 by bitcoin creator, Satoshi Nakamoto to support his cryptocurrency. (Cryptocurrency is essentially a snippet of code that represents ownership of a digital concept, like a virtual "IOU" that can be exchanged online.) There can be any number of blockchains—Nakamoto's was designed to solve the problem of devising a new currency backed by no central banks or governments.

How blockchain works

Each blockchain is, in effect, a giant decentralised electronic ledger—a record of transactions with duplicate copies held on thousands of computers around the world. "Miners"—people who agree to let their computers be used in the blockchain—are rewarded with cryptocurrencies such as bitcoin.

All these duplicate digital records held on those thousands of computers compare and confirm each transaction. The resulting record is lumped together into "blocks," then encoded to prevent hacking and chronologically bound together into a "chain."

This encryption process, known as "hashing," is carried out by every computer on the network. If they all agree, each block receives a unique digital signature. If not, the transaction fails. Anyone looking to alter a transaction would need to manipulate every supporting computer and, unless they sought changes instantly, would have to sift back through overlaid changes to find it. As a result, no transaction recorded can be altered or deleted—it's an irrefutable record that allows ownership and transfer of assets without the need for trusted third parties. It's proof not just of ownership but of provenance.

"Because the blockchain constantly moves forward, it stops you denying tomorrow what you said yesterday," explains Sam Smith, spokesperson for medical data privacy lobbying group MedConfidential. "You can say you were wrong but you can't say you didn't say it, which could be useful in many ways, from patient records to tracing pills."



BLOCKCHAIN EXAMPLES IN HEALTH

Countering counterfeits

"The blockchain provides a granular trail of a product's journey," explains Peter Bryant, chief operating officer of UK based global drug tracking system FarmaTrust. With the Drug Supply Chain Security Act in the US rolling out between 2015 and 2023, and the equivalent Falsified Medicines Directive in the EU coming into force next spring, all pharmaceutical products will require a label with a unique serial number, name, lot number, batch number, and expiry date. FarmaTrust is talking to 13 manufacturers as well as the Mongolian government to offer a blockchain tracking system that can link with existing databases. The company is also working with medicinal poppy and marijuana growers and the government in Thailand, to ensure that products are traceable and the farmers are taxed on profits.

Patient records

Technology company Medicalchain is partnering with southwest London general practice group, The Groves, in the UK's first trial of blockchain to create and support electronic health records. It offers registered patients a free digital wallet to hold and manage access to their health records. The platform includes a cryptocurrency—Medicalchain's MedTokens—to encourage patients to participate, which they can use to pay for telemedicine services.

Elsewhere, MIT research project MedRec is trialling a health records system that leaves patient records in hospitals or GP surgeries but offers what is effectively an electronic card catalogue. This connects every intervention or treatment on each record, allowing clinicians to identify and access patients' medical history wherever it is stored.

Raw medical record content "is never stored on the blockchain, but rather kept securely in providers' existing data storage infrastructure," according to the team. MedRec automatically keeps track of who has permission to view and change the record of medications a person is taking and rewards bitcoin-style "miners"—generally medical researchers and healthcare professionals—with access to aggregated, anonymised data for epidemiological studies.

American startup SimplyVital Health's Connecting Care works in a similar way while, in the UK, Healthchain also plans to connect health data with researchers.

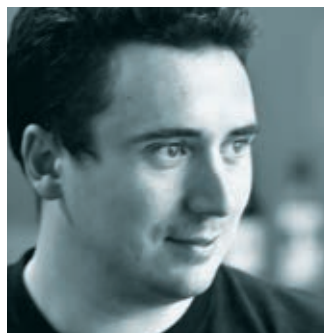


Beyond bitcoin

It didn't take long for people to realise that these properties of blockchain are useful beyond bitcoin. In a January 2016 report, Mark Walport, the UK government's chief scientific adviser, argued that blockchain technology could expand far beyond a trading tool. "Distributed ledger technologies have the potential to help governments collect taxes, deliver benefits, issue passports, record land registries, assure the supply chain of goods, and generally ensure the integrity of government records and services," the report concluded.

In healthcare, researchers are looking at blockchain to track medicines around the world, to store patient health records, and to monitor how patient data are changed. For Navin Ramachandran, a consultant radiologist at University College London Hospital and faculty member of the UCL Centre for Blockchain Technologies, the possibilities are immense.

"Many healthcare records are stored electronically in the cloud, which makes it easier for hackers to find a lot of confidential information," he says. "Sharing data like health records has been tricky across the NHS as it's hard to connect hospitals with different systems—so private data providers operate systems that aggregate or store data.



"Because the blockchain constantly moves forward, it stops you denying tomorrow what you said yesterday"

Sam Smith, MedConfidential

"Patient information on paper was hard to get hold of but difficult to tamper with. Now it's easier to get hold of, but a small group of people control all the data and can modify it."

The vanguard

Ramachandran is a healthcare adviser to the IOTA Foundation, a non-profit organisation based in Germany that promotes open source distributed ledger technologies. Since last summer, the foundation has been working with the Norwegian government to set up a public ledger encrypted in the cloud, to allow citizens to control their health data and allow access rights to individuals or institutions as the citizen sees fit. "Artificial intelligence and precision medicine both rely on data to make potentially life altering decisions," says Ramachandran.

"Securing the integrity of the data will become ever more important—that can be a system controlled by private companies or a system controlled by citizens. I'd prefer it to be the citizens, although the vastness of the ledger makes a public chain slow to update."

One private company that's working on blockchain technology is Google sister company DeepMind. It is developing a version of blockchain called a verifiable



"Securing the integrity of the data can be a system controlled by private companies or by citizens"

Navin Ramachandran, UCL Hospital

data audit, which will track any interference with information stored on the company's systems, in a bid to head off concerns raised last year over its handling of patient data at Royal Free NHS Foundation Trust.

"It's slightly different from the blockchain, which stores every transaction through data sharing," explains Andrew Eland, head engineer at DeepMind. "That establishes openness through the sheer amount of work taken to change the record.

"We want to verify who did what with patient data so we're building a slightly different system. Every interaction with patient data will be logged in a private ecosystem that either includes or can be easily accessed by trusted public bodies like the data guardian or the Medicines and Healthcare Products Regulatory Agency."

Overblown claims?

For some digital health experts, the claims made for blockchain are overblown. "Blockchain is a data storage and verification technology, which has some advantages over other data storage technologies—although it has some disadvantages, such as its high energy usage.

"Cryptomining now uses a substantial proportion of the world's electricity supply," says Marcus Baw, GP and founder of



"What matters to the people in the NHS is not the tech you use but the problem you solve"

James Somauroo, HS

openhealthhub.org, a coalition of forums for digital health.

"But, overall, it's a database. NHS technology, as provided by NHS Digital, is so archaic that we struggle with simple IT tasks like sharing the right data about the right patient, to the right care setting, at the right time.

"Blockchain will not make any impact in the NHS for the foreseeable future. Maybe one day, when the hype's died down and we will have found out which few tasks blockchain is uniquely suited to, we will find blockchain based applications in real life usage in the NHS. But right now, it's a solution in search of a problem," Baw says.

James Somauroo, a former intensive care specialist who cofounded the health digital accelerator company HS, is more positive but thinks blockchain evangelists have a lot to prove. "What matters to the people in the NHS is not the tech you use but the problem that you solve," he argues. "With blockchain it's still a very tech led conversation.

"What we need to see this year is one clear demonstration of how blockchain has solved a small problem—there are lots of trials but the NHS is on its knees, so it needs evidence that the blockchain can do a better, cheaper job."

Stephen Armstrong, freelance journalist, London

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The awards ceremony took place on 10 May at the Park Plaza Hotel, Westminster. To find out more go to thebmjawards.bmj.com.

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10
YEARS

BMJ AWARDS

Wendy Savage wins outstanding contribution to health award

The veteran campaigner is named as the person who has made an outstanding contribution to improving health and healthcare in the UK



Wendy Savage always has a new campaign up her sleeve. “If I get a call at 8.30 am on a Saturday, it’ll be Wendy saying, ‘I’ve got this fantastic idea,’” says Melanie Davies, consultant obstetrician and gynaecologist at University College London Hospitals. “She’s an inveterate campaigner—it’s her *raison d’être*.”

It’s this campaigning spirit, particularly on the NHS and women’s rights, that make Wendy Savage a worthy winner of this year’s The BMJ Award for Outstanding Contribution to Health.

Jacky Davis, the consultant radiologist who, with Savage, started the campaign Keep our NHS Public in 2005, knows her well but admits she has no idea of half of what she does. Her quality, she says, is absolute fearlessness. “She’s been involved in lots of organisations, including the GMC and the BMA, and she’s achieved what she has by challenging the medical establishment. She will speak truth to power.”

Her unflinching nature was forged in 1985 when she was the victim of an attempt to unseat her from her position as senior lecturer in obstetrics at the (then) London Hospital. What started as a difference over style and attitude quickly turned into allegations of incompetence, and two trials began: one of innuendo and whispers, the other a full judicial inquiry set up under a procedure to investigate serious professional malpractice.

Famously, she won. The charges against her were dismissed. “I’ve always been pretty determined,” says



"She is a very generous woman, generous with her time and generous with resources"



"She's achieved what she has by challenging the medical establishment. She will speak truth to power"

Savage today. "It was stupid to take on somebody like me." But the publicity, which was enormous, brought her wider recognition, even if it left a residual feeling that she was a difficult woman. "You had to be quite brave to say you were a friend of Wendy Savage," says Davies. "A lot of really effective people are quite difficult—they've got that inner strength, they don't really care what anyone else thinks or says."

Savage's return to work might have daunted lesser spirits. "I was hated by the NHS part timers," she says, referring to those at the London with private practices. "They wouldn't speak to me. One of them saw me in the car park one day and, rather than travelling in the same lift, walked all the way round the hospital to the other entrance. Another berated me for talking to his wife at a Christmas party. Yet I never really understood why we disagreed. It left me amazed."

She stuck it out, working mostly at Mile End Hospital where obstetric services were based. Huge support from local women and GPs during the dispute would have made it impossible to leave them in the lurch, she says. When she retired, Davies remembers, her valedictory meeting wasn't held at the London, but at a neutral venue. "I was asked to speak about her impact on medicine and I gave a talk about heroism, because to me she is a heroic figure. She stood alone in the face of criticism where other people would have crumbled."

Savage was born in 1935 in south London and brought up mostly in Woldingham in Surrey. She went to Croydon High School for Girls and then to Girton College Cambridge, the first of her family to go to university, where she was captain of hockey and also swam for the university. She started medical training at London Hospital Medical College in 1957.

Home and away

Qualified, she then spent most of the next 15 years working abroad. Her husband, an educational researcher working for a US organisation, was based in Africa developing a syllabus for primary science teaching. She worked initially in Boston, then in Nigeria and Kenya, while having four children.

In the early 1970s she got a job in the US, working for a service for poor women in east Boston. "I didn't mean to come back to England," she says, "but I didn't realise that the man who was organising the Boston job was having a nervous breakdown. It fell through." So instead she went to New Zealand with the children—"We were used to travelling" she says airily—staying for three years.

Back in England she was appointed to a senior lecturer post at the London by Peter Huntingford, still remembered as a charismatic obstetrician. "It's unusual to get a job at a London teaching hospital when you haven't had a conventional route up," says Davies. "Wendy had four children but

Above left: Wendy Savage takes part in a protest to Keep the NHS Public in April 2008

Above: Savage, a gynaecologist and advocate of women's reproduction rights, in 1986

she never went part time, it didn't exist in her day. Peter was quite exceptional, but when he retired a new professor came in and that's when trouble started."

Savage has been involved with countless organisations, both before and after the trouble. Her house in Islington was at the centre of a web of interests mostly centred around women gaining power over their own bodies in birth control, abortion, and obstetrics.

Davis says: "It's very difficult to get something like Keep The NHS Public off the ground, but Wendy was always there, she did a lot of public speaking, she ran the campaign out of her house, her secretary was immediately devoted to the campaign. She is a very generous woman, generous with her time and generous with resources."

Looking back, Savage believes that obstetrics and gynaecology is much better than it was, with far more women appointed, but questions the GMC reforms which have reduced representation and made it more corporate. She despairs of the position of junior doctors "who are just supposed to get on with it with no support." She is delighted that, at the fourth attempt, the BMA voted at last year's annual representative meeting that abortion should be taken out of the criminal law.

At 83, is she thinking of slowing down? Not really. After 16 years on the BMA Council, she's thinking of standing again. And she probably will.

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End the extravagance of consultants on call

A bill of around £1bn is unacceptable for a service that makes less difference than is generally thought

That “consultants do it better” has become an NHS truism, with 24/7 cover now seen as a cornerstone of safe and effective patient care. And for overnight on-call services this seems to come at a bargain basement price. Consultants receive the princely sum of £7.50 an hour for trekking into the hospital at night. Paying consultants a percentage of their base salary (1-8%, depending on frequency and intensity of work) seems like an excellent deal for the NHS.

The truth, however, is that the system is an extravagant waste of money. The problem lies with successive initiatives designed to reduce clinicians’ fatigue and improve outcomes. The near uniform responses of the royal colleges to the European Working Time Directive—which limits the time doctors spend either working or on call—and moves to a seven day a week consultant delivered service have been to call for the expansion of the consultant workforce. So where

once a moderately busy service needed four to six consultants, it now needs 12. For more acute services, such as emergency medicine and surgery where an overnight return is likely, the recommended minimum is 15.

The number of consultants in England has risen by a more than half since the directive was introduced: from 30 650 in 2003 to 47 816 in March 2017. Given that the largest growth has been in acute services, then the minimal cost this year of paying those extra on-call supplements is more than £25m. When additional base wages are factored in, the cost balloons to more than £900m.

Some may point to the relentless rise in demand for unscheduled services and the benefits of consultant input and consider the money well spent. Consultants, however, make much less of a real difference out of hours than is commonly thought. Lifesaving interventional treatments, usually expected to be consultant led, constitute a tiny portion of emergency

The move to 24/7 consultant cover is at the very root of shortages in the senior workforce

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work. Only 1% of all emergency department patients have conditions such as stroke, trauma, or myocardial infarction that require immediate intervention. The average hospital performs only three emergency laparotomies a week, and most are done in normal clinic hours.

More importantly, the move to 24/7 consultant cover is at the very root of shortages in the senior workforce. The minimum numbers mandated by the EU directive do not take into account hospital size or patient demand. While having 15 consultants to deliver a 24/7 interventional service might be essential in a metropolitan teaching hospital, it may be a toxic aspiration in a medium sized district hospital.

Comparison with countries where on-call work in public hospitals is relatively unrestricted is revealing. Hospitals in Australia, New Zealand, Canada, and the US deliver high quality services with much smaller consultant bodies. Doctors are paid nominal on-call fees, with generous rates for being woken in the early hours or having to return to work. Under such conditions, consultants more easily tolerate on-call shifts, and hospitals can staff for routine work.

A £1bn bill for out-of-hours services is unacceptable. The system needs to be urgently rethought and services matched to patient demand. Doctors should be paid for what they do.

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