inside medicine

PA COURSES CLOSED page 114 • **CHILD MENTAL HEALTH** page 118 • **MMR JAB** page 120

The young doctors facing a jobs crisis

Elias Ioannou (right) has been unemployed since he finished his foundation studies last August. Natalie Paisley has been more fortunate and is due to start GP training

EXCLUSIVE Foundation year 2 doctors due to finish training next week are looking to leave the UK after failing to find a role in the NHS. Others have shared how they had been living on jobseeker's allowance as they compete with thousands of others for posts.

Late last month a BMA survey of just over 1000 FY2 doctors found that up to half don't have a job to go to when they finish foundation training. With more resident doctors unable to obtain training places, competition for non-training roles is fierce.

One resident doctor, Elias Ioannou, has been unemployed since finishing the foundation programme last August. He has applied for "at the very least a hundred jobs" in the NHS and been told some roles received more than 7000 applications.

Ioannou has also applied for jobs in cleaning, gardening, and hospitality, but says such work is hard to come by. "No one wants to know. They see that the only experience I have is within medicine, and, one, it's not relevant, and two, they think you're just going to leave," he said. Ioannou is now surviving on Jobseeker's Allowance and savings.

Other doctors have abandoned efforts to stay in the UK. One, Emily, who asked *The BMJ* not to use her surname, is moving to New Zealand when her FY2 contract finishes. "I accepted the job as soon as I found out I wasn't going to get one over here," she said. "I will be taking a lot of resentment with me, because this is 'push' rather than 'pull.'"

Emily has wanted to be a GP since she first applied to medical school. Keen to stay in the area where she is settled with her husband, she was hoping for a job in the Northern deanery. She points out that before 2024 jobs in the area were so undersubscribed doctors were offered "golden hellos" of £20 000.

"The training, the remuneration, and the working conditions in the UK just don't stack up for me," she said, "I just can't see a future."

Natalie Paisey is one of those who has been able to secure a post and is due to start GP specialty training this summer. Despite this, she said she had no confidence in government plans to tackle the training bottlenecks.

The BMA has said around 30 000 doctors are competing for 10 000 specialty training places this year. Its analysis of NHS England vacancy data in March found 7679 medical vacancies across all grades in secondary care.

The finding that half of FY2 doctors face unemployment has prompted the BMA to launch a fresh dispute with the government over training bottlenecks.

Ella Hubbard, *The BMJ*

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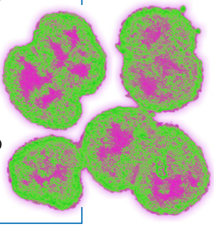
LATEST ONLINE

- Patients coming off weight loss jabs need ongoing support, says NICE
- Thousands of PAs to keep jobs as Leng review row continues
- Gonorrhoea vaccine rollout aims to combat surge in cases



MEDICAL NEWS

PA courses suspended by four universities after Leng review

EXCLUSIVE Four universities have suspended or closed physician associate programmes in the wake of the review of medical associates by Gillian Leng (left).

A Sheffield Hallam University spokesperson told *The BMJ* it will not be recruiting a 2025-26 cohort for its PA programme "to allow time to reflect on the outcomes of the Leng review." The University of East Anglia, confirming its final intake in January, said the decision was taken after a substantial decline in applications and job opportunities.

Brighton and Sussex Medical School also announced it "will not be recruiting a new intake" of PA students for the 2025 academic year. This "pause" will allow "time to reflect on the outcomes of the Leng review and to consider the evolving landscape around employment opportunities for PAs," it said. The University of Chester had also decided to suspend recruitment for 2025 in November last year.

Leng's review recommended changes be made to both PA and anaesthesia associate (AA) roles—including new names, clothing, lanyards, and badges to distinguish them from doctors—following controversy over patient safety.

Stephen Nash, general secretary of United Medical Associate Professionals, said the union was deeply concerned. "Since the Leng review was published, we have feared these programmes would become the target of increased attacks against PAs—we are deeply dismayed that these fears are becoming a reality."

Kate Bowie, *The BMJ* Cite this as: *BMJ* 2025;390:r1612

Cancer

Most of world's liver cancer cases "are preventable"

Six in every 10 liver cancers diagnosed worldwide are preventable by reducing risk factors, concluded a "conservative calculation" of cases projected until 2050. The Lancet commission on the rising disease burden of liver cancer called for countries to commit to reducing cases by 2% a year by tackling risk factors such as viral hepatitis, alcohol, and metabolic dysfunction associated steatotic liver disease. By 2025 this would prevent nine million new cases and save eight million lives, the commission estimated.

Chronic fatigue

ME/CFS training plan is not enough, say campaigners

The Department of Health and Social Care's final delivery plan on myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) says healthcare professionals will be offered new training. The e-learning modules aim to "increase understanding and ensure signs are not missed" but will not be mandatory.

Sonya Chowdhury (below), chief executive of Action for ME, said she welcomed the aim to redress stigma and improve training, but the plan "simply does not go far enough." She called for a more strategic approach and a funded, dedicated research hub in the UK.

Personalised medicine

Hospitals will produce personalised gene treatment

MHRA, the medicines regulator, introduced regulations that will enable hospitals to perform the final manufacturing steps of personalised gene treatments. Before the regulations came into force on 23 July personalised treatments such as CAR-T cell therapy for cancer had to be sent to specialised manufacturing sites for the final steps to be performed. This caused delays, with patients sometimes becoming too unwell to receive the treatment. The UK is the first country to introduce such regulations for medicines made at the point of care.

Maternity care

Discrimination felt by 28% of black women

More than half of black women surveyed (54%; 458) had problems with healthcare professionals during their pregnancy, and 28% (237) reported being discriminated against. The campaign group Five X More analysed 845 responses from black and black mixed heritage women pregnant from July 2021 to March 2025 who had used UK maternity services. However, this was an improvement on the previous survey report in 2022, which looked at the experiences of pregnant black women from 2016 to 2021, when 43% of women reported feeling discriminated against.

Dementia

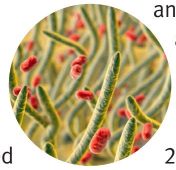
Structured programme improves cognition

Among older adults at risk of cognitive decline and dementia a structured, higher intensity intervention had a statistically significantly greater benefit on global cognition than an unstructured, self-guided intervention, in a randomised controlled trial of 2111 people. Both interventions encouraged increased physical and cognitive activity, healthy diet, social engagement, and cardiovascular health monitoring but differed in structure, intensity, and support. Both study groups showed improved cognition after the two year trial, researchers reported in *JAMA*.

Drug resistance

Aid cuts could worsen AMR, experts warn

Cuts to international aid programmes could trigger a rise in antimicrobial resistance and cause global annual gross domestic product (GDP) losses of $1.7tn (£1.3tn) within 25 years, researchers warned. In contrast, improving antibiotic access and introducing new drugs could increase global GDP by $960bn a year in the same period. The research, conducted by the Center for Global Development and funded by the UK government, combined health projections with literature reviews and models of healthcare costs.



IN BRIEF

Women in the US are having fewer than two children each

Birth rates

Fertility rate in US falls to new low

US fertility rates dropped to a record low in 2024 with fewer than 1.6 children born per woman, showed data from the Centers for Disease Control and Prevention. The US previously bucked the trend of declining fertility rates in the western world, but the latest figures show it on a par with most western European countries, including the UK. In the early 1960s the US's total fertility rate was around 3.5, but it dropped to 1.7 by 1976. It then rose to 2.1 in 2007 before falling again.

RSV vaccine

Jab is "highly effective" in preventing hospital stays

A UK Health Security Agency study found the respiratory syncytial virus (RSV) vaccine to be around 82% effective in preventing older people being admitted to hospital with the infection. A separate study found the maternal RSV vaccine was 72% effective in preventing hospital admission in infants whose mothers were vaccinated more than 14 days before delivery. Latest agency figures showed that 62.9% of 75-79 year olds and 54% of pregnant women had received the vaccine.

Journal ethics

Frontiers retracts over 100 "manipulated" articles

The open access scientific publisher Frontiers plans to retract 122 articles published across five journals after discovering that papers were affected by the "unethical actions" of around 35 authors. The publisher said it had identified a "peer review manipulation network" with authors manipulating citations and reviewing papers without disclosing conflicts of interest. Only 122 papers are under immediate review, but Frontiers said the integrity of more than 4000 articles issued across seven other publishers were in question.

World hunger

Global hunger declines but progress is uneven

An estimated 673 million people faced hunger in 2024, equivalent to 8.2% of the world population, a report from the World Health Organization and UN agencies found. This represented a decrease from 2023, but progress was inconsistent, with hunger continuing to rise in most subregions of Africa and western Asia. The proportion of the population facing hunger in Africa surpassed 20% in 2024, affecting 307 million people.

O&G

Burnout rose after pandemic, survey suggests

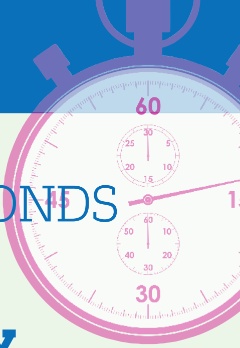
Obstetricians and gynaecologists have become more likely to report suicidal thoughts since the pandemic, a survey found. An Imperial College London survey of 1400 practising doctors, who had been registered with the Royal College of Obstetricians and Gynaecologists from June to August 2022, compared the findings with 2018. They found that 72% (805) of respondents met the criteria for burnout, up from 36% (1116) in 2018.

Cite this as: *BMJ* 2025;390:r1621

E COLI

Culture confirmed cases of Shiga toxin producing *Escherichia coli* infections totalled 2544 in England in 2024, a 26% increase

[UK Health Security Agency]



SIXTY SECONDS ON . . . POLLEN IMMUNITY

A BUDDING BREAKTHROUGH?

NICE has recommended betula verrucosa (Itulazax), a once daily immunotherapy tablet for people with moderate to severe allergic rhinitis or conjunctivitis (hay fever) caused by birch tree pollen.

TACKLING THE ROOT CAUSE?

It is the first tree pollen immunotherapy approved for NHS use in England and Wales. NICE said Alk-Abelló's tablet, works by "training the immune system to tolerate tree pollen over three years of daily use."

NEW TREETMENT

The tablet contains birch pollen allergen extract and is recommended for patients whose symptoms persist after using hay fever remedies such as antihistamines. Up to 27 000 people in England are estimated to be eligible, although they will need a positive skin prick or blood test to confirm they have a birch tree pollen allergy.

WHEN CAN I GET IT?

NHS England is set to provide the treatment within three months.

THE PROOF IS IN THE POLLEN

The recommendation draws on a phase 3 placebo controlled trial involving 634 patients aged 12 to 65 with birch induced rhinoconjunctivitis. Those taking betula verrucosa had 33% fewer symptoms than those taking a placebo.

MONEY DOESN'T GROW ON TREES

At around £80 for a pack of 30 tablets, the treatment isn't cheap. NICE acknowledged there was "uncertainty in the economic model" regarding the number of healthcare appointments that would be saved. Despite this, it considers the treatment "an acceptable use of NHS resources."

INTO THE WILD

Helen Knight, NICE's director of medicines evaluation, said, "Severe tree pollen allergies trap people indoors during beautiful weather and disrupt their work, education, and family life." Hay fever affects almost 10 million people in England, and the number is rising every year, according to the Met Office.

A study by Manchester University attributed the increase to factors such as a rise in environmental allergens, urbanisation, and climate change.

Kate Bowie, *The BMJ*

Cite this as: *BMJ* 2025;390:r1633

GAZA: **Babies starve as "politicians focus on PR spectacles"**

Doctors and aid workers are watching helplessly while Palestinian children die, as the malnutrition and care crisis in Gaza reaches catastrophic levels.

Speaking from Gaza, Tarek Loubani, medical director of the humanitarian organisation Glia, said, "What I see in the hospital right now is that every single patient is starving."

Reports suggest that 147 people, including 88 children, have died of malnutrition in Gaza in the conflict so far. One baby (below), Zainab, died just a couple of weeks after being seen by Medical Aid for Palestinians (MAP).

MAP said in a statement, "We met her mother just a couple of weeks ago at Nasser Hospital. She couldn't find the medical care Zainab needed in Gaza, nor was she allowed medical evacuation, as her mother was hoping. More children will die as this madness continues."

Loubani said official starvation numbers were probably not even a 10th of the real figure. He explained that deaths marked as due to malnutrition are ones that occur only in people without any other comorbidities—a rarity in Gaza.

Forced to watch treatable children die

Faced with minimal medical supplies and food, doctors are also forced to watch children die from treatable conditions. "I can't stop thinking about this little boy aged one and a half, who we were treating all alone on the floor in Nasser Hospital because his entire family had been killed," Loubani recalled. "As we were dealing with him, I knew that if we were in Canada this is a boy who would easily be treatable. He needed some blood, some surgery, some aftercare, and yet we just had to sit there and watch him die.

"We all cried and walked him to the morgue, where we laid him widthwise on a long metal bed, where he joined about another dozen kids."

Late last month there were reports that Israel had agreed to allow more aid into the strip. However, Ghada Al Haddad, Oxfam's communications officer in Gaza, said, "This is a drip feed meant to quiet the public outrage, not to save lives."

Some countries, including Jordan, Israel, and Germany, have also announced plans to air drop aid into Gaza. Bushra Khalidi, Oxfam's area policy lead, said, "Airdrops are just not a solution. They're a spectacle. If governments truly wanted to save lives they would open the land crossings. Opening the seven crossings to Gaza for just one hour would deliver far more aid than days of airdrops ever could."

➲ **OPINION, Alex de Waal, page 140**

Elisabeth Mahase, *The BMJ*

Cite this as: *BMJ* 2025;390:r1610

Discord over strike action grows after record number of derogations

A record number of requests to have striking doctors return to work were made—and rejected—during the most recent industrial action over pay. Some 53 derogations (requests by employers to exempt doctors from participating in strikes) were made during the five day walkout from 25 to 30 July. The vast majority of requests were declined by the BMA, with only seven granted.

This is the highest number of derogations ever received. It represents a 43% rise on the previous record, a six day strike in January 2024.

The most recent strike differed from previous industrial action in that NHS England's chief executive, Jim Mackey, told trusts to keep running non-urgent routine procedures, therefore consultants were not freed up to provide cover.

The BMA said many of the latest derogations were refused because they were a result of poor planning by trusts or were inappropriate. Some were for trusts that had seemingly planned for resident doctors to be at work despite strike action being announced in advance. Others were for trusts that had not organised any additional consultant or specialist cover or had turned down offers of cover. One derogation request, which was granted, was due to consultants saying they were uncomfortable using a recently introduced electronic patient record system.

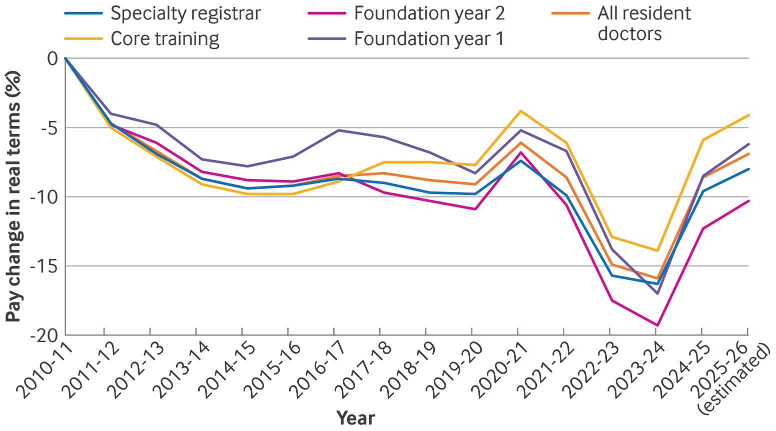
BMA council chair Tom Dolphin criticised the attitude of NHS England and trusts to what he claimed was the inappropriate use of derogations. He said, "NHS England was risking chaos and patient safety by instructing trusts to continue elective procedures during industrial action—and the resultant record number of derogation requests showed our warnings becoming a reality.

Resident doctors' pay 4-10% lower than in 2010-11, shows analysis

A Nuffield Trust analysis has shown that resident doctors' pay is still behind 2010-11 levels in real terms. The think tank published the data as NHS England's chief executive said doctors should suffer financial consequences for the latest strikes.

The analysis found that, even after accounting for the latest pay increases, real terms average earnings in 2025-26 "still fall behind 2010-11 levels by between 4% and 10%." But it added that doctors' position had "markedly improved since 2023-24," when they faced high inflation and sacrificed pay when striking.

The data come as the BMA continues to campaign for a 26% pay rise for



JAMES MANNING/PA

Resident doctors on strike outside St Thomas' Hospital in London on 25 July

"Failure to plan and prioritise emergency care are not grounds to request a derogation."

Talks are set to continue between the BMA and the government this month, after the BMA wrote to health and social care secretary Wes Streeting on 29 July inviting him back to the negotiating table.

Streeting replied, "Thank you for your letter . . . inviting me to get back to the negotiation table, which is ironic because I never left. As I made clear last week, the decision taken by your committee to proceed with strike action over the past five days was deeply disappointing and entirely unnecessary."

Failure to plan and prioritise emergency care are not grounds for derogation Tom Dolphin

Discussions are likely to be tense, with both sides highly critical of each other, as indicated by Streeting's comments: "The consequences of your strike action have been a detrimental impact on patients, your members, your colleagues, and the NHS. Your action has also been self-defeating, because you have squandered the considerable goodwill you had with me and this government."

Dolphin hit back by saying, "As always, we are committed to safe and effective industrial action, but during this round of strikes NHS England made this incredibly challenging, acting recklessly in the name of political point scoring."

Resident doctors took to the picket lines last month as part of the BMA's rejection of a proposed 5.4% pay award for 2025-26.

Adrian O'Dowd, Kent

Cite this as: *BMJ* 2025;390:r1627

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resident doctors, having launched a five day strike last month after the government refused to meet its demands. The increase is needed to restore the full value of resident doctors' salaries to the 2008 level, the BMA says.

2008 baseline

A BMA spokesperson said its use of a 2008 baseline and the retail price index (RPI) in pay level calculations better reflected the "real life experience of working people in the UK." The union also pointed out that the RPI is used to set student loan repayments, car taxes, and train fare caps, adding that "doctors are not worth less than they were 17 years ago, when austerity policies began driving wages down. We're simply asking for that value to be restored."

But the Nuffield Trust's report, which used the consumer price index (CPI) to adjust for inflation, said the Office for National Statistics did "not think RPI is a good measure of inflation and [discourages] its use," adding that data collection on actual earnings changed in 2010.

It follows NHS England chief executive Jim Mackey stating that, while previous strikes had been "net positive from a financial point of view" for doctors, the most recent action must not be "consequence-free."

Meanwhile, leaked details of a rejected offer from the Department of Health and Social Care to the BMA, published by the *Sun*, show the government had proposed a range of non-pay options for doctors in a bid to avoid the strikes. These included reducing the costs of exams and equipment and even "food and drink costs experienced by doctors."

Health secretary Wes Streeting also put a £100m investment in postgraduate training places in 2027-28 on the table during negotiations, the report said.

Now that the strikes have concluded, talks between the BMA and the government are set to continue, with the union inviting Streeting back to the negotiating table.

Kate Bowie, *The BMJ*

Cite this as: *BMJ* 2025;390:r1567

Surgeon accused of fraud over leg self-amputations

An NHS consultant vascular surgeon has appeared in court charged with fraud for allegedly trying to claim more than £460 000 from insurers for two below-the-knee amputations he carried out on himself.

Neil Hopper allegedly made a dishonest representation that the "injuries to his legs were the result of sepsis and were not self-inflicted, intending to make a gain."

Suspended after arrest

Hopper, 49, employed by the Royal Cornwall Hospitals NHS Trust from 2013 until he was suspended after his arrest in March 2023, had carried out hundreds of amputations during his career. His own amputations were performed in June 2019.

The court heard that he claimed £235 622 from one insurer and £231 031 from another.

He is also charged with encouraging or assisting the commission of grievous bodily harm by buying videos from the "Eunuch Maker" website featuring the removal of limbs, which "encouraged Marius Gustavson [who ran the website] to remove body parts of third parties."

Hopper was remanded to appear before a judge at Truro Crown Court on 26 August.

After his operation Hopper applied to the European Space Agency to become a disabled astronaut and made the shortlist, although his application was unsuccessful. His LinkedIn profile describes him as a "somewhat legless vascular surgeon" interested in "gadgets, space, prosthetics, and 3D printing." It says he qualified in 2000 from the University of Wales College of Medicine and obtained a doctorate in 2009.

NEIL HOPPER: "I AM A SOMEWHAT LEGLESS VASCULAR SURGEON"

Brave Briton award

His profile also mentions his Amplifon Brave Briton award in 2020, when he won the "against all odds" title. Speaking of his amputation, he said, "The thought of power tools being used on me was icky. It was very weird."

The Medical Practitioners Tribunal Service placed interim restrictions on Hopper's practice in April 2023, and he has been suspended from the medical register since December 2023.

A Royal Cornwall trust spokesperson said, "The charges do not relate to Mr Hopper's professional conduct and there has been no evidence to suggest any risk to patients." The trust said former patients with any questions about their treatment can contact it on 01872 25 2793 or email rcht.patientexperience@nhs.net.

Clare Dyer, *The BMJ*

Cite this as: *BMJ* 2025;390:r1558

Kar to appeal suspension of RCP fellowship

Partha Kar, a Royal College of Physicians councillor, says he will appeal the college's "disproportionate" decision to suspend his fellowship over what he claims was "whistleblowing."

An RCP panel ruled that Kar, a consultant in diabetes and endocrinology and *BMJ* columnist, breached several codes, including its rules on confidentiality and social media use. The panel cited posts on Kar's X account that included "identifiable" council papers and "confidential information" on a meeting between the RCP, the GMC, and NHS England on providing affiliate membership for physician associates and the council's submission to Gillian Leng's PA review.

The decision doesn't even fit principles of natural justice

The council accepted the panel's recommendation that Kar be suspended for a year.

Kar told *The BMJ* that the decision was "disproportionate" and "doesn't even fit principles of natural justice." He added that he was being punished for raising issues through whistleblowing. He said, "It's exactly what the NHS and relevant organisations need to change if we are genuine about tackling patient safety. I will appeal and then, depending on the response, consider next steps."

The RCP said, "Our processes reflect a commitment to upholding professional standards and ensuring all conduct cases are considered carefully, consistently, and with respect for all parties involved."

Kate Bowie, *The BMJ*

Cite this as: *BMJ* 2025;390:r1547

Fix "unfair" child mental health funding to protect our future health and prosperity, top paediatrician urges

EXCLUSIVE The NHS 10 year plan pledges to transform child health, but RCPCH president Steve Turner warns delivery is the key. **Gareth Iacobucci** reports

"Poorly children become poorly adults but, equally, healthy children become healthy adults. Obviously the physical and mental health of the nation is a good thing. But also economically it's a really important thing."

As the president of the Royal College of Paediatrics and Child Health, Steve Turner is used to thinking about the bigger picture.

Turner, a consultant paediatrician in general and respiratory paediatrics at Royal Aberdeen Children's Hospital, became college president last April. Since then there's been a new government, a fresh 10 year plan for the NHS in England, continuing pressure on waiting times, and further strikes by doctors.

But despite the 10 year plan's pledge to raise the "healthiest generation of children ever," Turner warns of major barriers to achieving this. "I think that there is a gap, as there often is with plans, between the vision and the reality," he says. "How is this actually going to translate to people working with children?"

He welcomes the plan's focus on prevention and specific policies such as working with schools, colleges, and universities to identify and meet young people's mental health needs earlier and improving access to specialist mental health services. But his concerns are threefold: a lack of a specific implementation plan, workforce shortages, and what he said was the inequitable level of funding between children's and adults' health services.

Turner says one of the starkest examples of this inequity was in mental health support for children: "Thirty per cent of the mental health need for the NHS comes from children, but children's mental health services get 8% of the budget.

"I'm not advocating for more, I'm just advocating for equal—25% of the population are children, but they only get about 11% of the overall NHS budget. That's iniquitous."

The inequity is clearly illustrated by children waiting far longer than adults for NHS treatment, including mental healthcare, he says. "If you are in England and Wales and you've been waiting for more than 12 months to be seen by a community service, you're 16 times more likely to be a child than an adult," he observes.

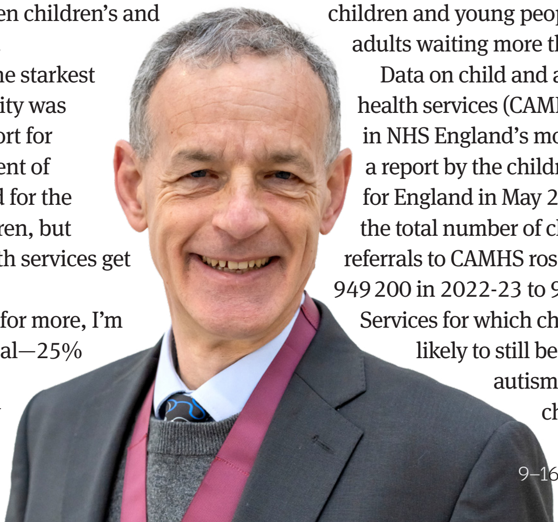
"Whichever way you look at that, you'd have to say that's not fair. If you're an 8 year old and you've been waiting for a year, that's 12% of your life. If you're a 50 year old and you've been waiting three years, that's 2% of your life.

"It's a source of much frustration and disappointment to me that those community services aren't configured to meet the needs of children, whereas they seem to be better configured for adults."

The latest NHS waiting times data for community health services in England show that the total number of people (adults and children combined) reported to be waiting more than 52 weeks for treatment was 88 379 in May 2025. This has come down since May 2024, when it stood at 252 224.

But the decline has been much faster for adults than for children. In May 2025 the vast majority waiting more than 52 weeks (75 584) were children under 16 and young people aged 16-24, and only 12 795 were adults aged over 24. In contrast, in May 2024 there were 127 107 children and young people and 125 117 adults waiting more than 52 weeks.

Data on child and adolescent mental health services (CAMHS) are not reported in NHS England's monthly figures. But a report by the children's commissioner for England in May 2025 showed that the total number of children with active referrals to CAMHS rose slightly from 949 200 in 2022-23 to 958 200 in 2023-24. Services for which children were most likely to still be waiting were the autism service (78% of children referred still



waiting) and the neurodevelopment team (73% still waiting).

A fifth of people in England aged 8-25 years had a probable mental disorder, according to a 2023 NHS survey, the latest of its kind.

The way to fix such access problems, Turner argues, is simple: greater investment in child health services and the workforce.

He laments that the RCPCH "wasn't involved" in the 2023 NHS workforce plan and hopes things are different next time, with an update to the blueprint expected later this year. "We were just forgotten," he says.

He emphasises that the solutions he proposes are not just about lobbying to boost the number of paediatricians being trained but also about setting targets to tackle shortages in other staff areas.

"We've seen a 40% reduction in health visitors over eight years," he says. "It's a really worrying contraction."

Early intervention

If he could identify the most important policies that could make the biggest difference to child health, what would they be?

"I could almost say prevention, prevention, prevention," he says. "I think the emphasis has to be on prevention—early detection and on educating children and their parents around health. Because children are 25% of the population and 100% of the future."

He highlights the "huge burden of mental health that develops in childhood," including neurodiverse conditions such as attention deficit/hyperactivity disorder (ADHD) and autism. "We need a service that can identify those early and deliver interventions which are known to mitigate against those mental health conditions, moving a child from being inactive in either education or the economy and to be active in the economy," he says.

"The 10 year plan does look to do that, albeit by 2029-30."

He says the current healthcare system, where many children and young people cannot access mental health support until they have a diagnosis, is "unfair" and does not recognise that everybody's needs are different.

Investment in childhood reaps many dividends in terms of wealth and health Steve Turner

Getting children with mental health conditions an early diagnosis is considered critical as it can help prevent issues from becoming more severe and requiring more intensive and costly support. A diagnosis also enables children and their families to access support such as cognitive behavioural therapy, training and education, other resources, and drug treatment.

Turner says the NHS should adopt approaches already being used in schools. "Because waiting lists are so long, schools are now realising they can't wait for a diagnosis," he says. "They put a plan together that recognises the individual child's needs.

"So there is a need for people to move towards a needs based approach, rather than, 'Well, we can't do anything because the child hasn't got a label.'

"As we move forward, hopefully the service will become more able to say, 'Right, well, we don't need a label, let's just treat the child on an individual basis.'"

And although the NHS clearly has a key role, Turner also points out that much needs to happen outside the health service.

"The social determinants of health—housing, transport policy, food, education, quality of air—all that lies outside even Wes Streeting's gift," he says. "To have an impact on the healthcare system, the intervention has to be delivered outside the healthcare system, because that's where the drivers for poor physical and mental health lie."

He argues that the case for investing more in children is clear, morally and economically.

"I think it was Mr [Adam] Smith in Glasgow in the 1700s who pointed out that the economy is mostly dependent on the health of the population," he says. "So being as neutral as I can be, investing in children is a really good idea, because not only do children have a good quality of life, low morbidity, and low mortality, that investment in childhood reaps many, many dividends further down the life course in terms of wealth and health."

Responding to Turner's comments, a Department of Health and Social Care spokesperson said, "Everyone should have access to the vital mental healthcare they need, regardless of their age.

"That is why this government is committed to transforming our mental health system as part of the 10 year health plan.

"For children specifically we are already over halfway to recruiting 8500 extra mental health staff to slash waiting lists, and we are expanding the rollout of mental health support teams in schools to cover up to a million more pupils this financial year.

"These actions will ensure that we shift the focus from sickness to prevention, to create an NHS fit for the future."

Gareth Iacobucci, *The BMJ*

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A FIFTH of people in England aged 8-25 years had a probable mental disorder, according to a 2023 NHS survey

NEWS ANALYSIS

MEASLES AND MMR:
Do I need another vaccine?

Falling vaccination rates and rising cases have raised concerns about the re-emergence of one of the world's most contagious diseases. **Kate Bowie** examines whether current guidance needs revisiting

The death of a child in Liverpool from measles has intensified calls for the NHS and government to tackle the disease's re-emergence in a country that was declared measles free by the World Health Organization four years ago.

Steve Turner, president of the Royal College of Paediatrics and Child Health, was among those raising the alarm, telling *The BMJ* that such a fatality "has to be a never event." The US is also seeing a big spike, reporting the highest number of confirmed cases since 2000.

? When was measles vaccination first introduced in the UK?

A measles vaccine was first rolled out in the UK in 1968, and the combined measles, mumps, and rubella (MMR) vaccine was introduced in 1988.

Children are now offered the first dose of the MMR jab on their first birthday and the second when they are around 3 years and 4 months old. But from January 2026 this will change and children will have their second MMR dose much earlier, at 18 months.

Solid data back up the jab. Within two weeks of both doses over 99% of children are protected against measles and rubella and 88% are protected against mumps.

? How has UK measles prevalence changed recently?

Latest UK Health Security Agency (UKHSA) data showed that at least 145 measles cases had been reported in England since the last publication on 3 July. Of the 674 laboratory confirmed measles cases reported since the start of the year, 48% (322) have been in London, 16% (111) in the North West, and 10% (65) in the East of England.

Last year saw 2911 laboratory confirmed measles cases in England, the highest annual number of cases recorded since 2012. Most of these occurred in unvaccinated children under the age of 10, the UKHSA said. The agency has also pointed to a resurgence of measles across Europe after the covid-19 pandemic.

? How has vaccine uptake changed?

When the MMR vaccine was first introduced in 1988 vaccination coverage hit 90% and measles cases fell substantially. But widespread concern about a now thoroughly discredited link between the vaccine and autism in the late 1990s and early 2000s saw uptake drop below 80% for even just one dose of MMR by the age of 2.

MMR is the canary in the coal mine for overall vaccine uptake
Stephen Griffin

Local and national catch-up campaigns were implemented in 2004-05 and 2008, but by 2012-13 cases increased again despite the highest ever English MMR vaccination level among 2 year olds. The spike in cases was attributed to infections among teenagers who had missed out on the vaccine as babies.

Then in 2017 the WHO Regional Verification Committee declared that the UK had eliminated endemic measles. That year vaccine coverage of the first MMR dose in 5 year olds hit the herd immunity target of 95% for the first time. But by 2018 measles transmission had been re-established in the UK, after large epidemics across Europe, and elimination status was lost.

A sudden drop in cases caused by efforts to halt covid-19 saw the UK regain elimination status in 2021. However, increasing case numbers mean this is "unlikely to be sustained," the government has warned.

Uptake of both doses of the MMR jab was at 84% in England as of 2023-24—significantly below the herd immunity target. Take-up is lower in certain groups. People living in London and other inner city areas, immigrant groups, Traveller communities, and ultra-orthodox Jewish communities are among those known to have lower MMR vaccine uptake. For example, the vaccination rate for both MMR doses among 5 year olds is as low as 61% in Hackney, 64% in Islington, and 65% in Kensington and Chelsea.

Speaking to *The BMJ* on the statistics, Stephen Griffin, professor of cancer virology at the University of Leeds, said measles was the "canary in the coal mine" for overall vaccine uptake, owing to how infectious it is. He pointed to an ongoing "very obvious active movement that discredits vaccines" as partly to blame for the current dip in uptake, as well as a decrease in children being vaccinated during covid-19 lockdowns.

TEREZA SHAKHNAZARYAN/ALAMY

How many adults might not have immunity?

Current measles immunisation guidance in the UKHSA's "green book," last updated in 2019, states that people born in the UK before 1970 are likely to have had natural infections of measles, mumps, and rubella, making them likely to be less susceptible. The Department of Health and Social Care and UKHSA say that these patients should be offered the MMR vaccine on request or if they are "considered to be at high risk of exposure."

The guidance adds that people born between 1970 and 1979 may have been vaccinated against measles and many will have been exposed to mumps and rubella as children. And adults born in the UK between 1980 and 1990 are likely to have been vaccinated against measles and rubella but may not be protected against mumps.

The NHS recommends that all people born between 1970 and 1990 should speak to their GP to ensure that they are vaccinated against all three infections.

Healthcare workers and people travelling abroad also ought to ensure they are fully protected.

Young adults—who had avoided both natural measles infection and measles vaccination over a prolonged period of decreased incidence of the diseases—are another age group at risk. Unless there is a reliable history of appropriate immunisation, individuals should be assumed to be unimmunised," the government guidance states.

What if I never had the MMR jab?

Griffin told *The BMJ* he was one such patient who was at school before the introduction of the MMR. When he was planning a trip to Canada, "I knew there were cases there," he said, "and it's been something that's sort of been playing on my mind with all the outbreaks that we've had over the past few years in the UK.

"So I just got in touch with my GP and said, 'I would like the MMR please, because I don't think I've had it.' They said, 'Yes, sure.'

"I went along to the nurse clinic, and I was in the waiting room with lots of babies and . . . then I went back last week and had my second booster.

"I was surprised I didn't have any sort of adverse reaction at all. Just a very slightly stiff shoulder and that was it."

How long does immunity last?

Last year a London School of Hygiene and Tropical Medicine study found that, although the MMR vaccine still remains effective at protecting patients from measles, this does decrease over time. The study, published in *Lancet Public Health*, applied a compartmental mathematical model stratified by age group, region, and vaccine status to UKHSA data on 7504 confirmed cases in England between 2010 and 2019.

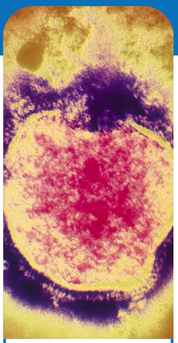
The researchers applied models that mapped case numbers with and without waning of vaccine induced immunity to evaluate which scenario replicated real transmission trends in the UKHSA data. They found that "measles case dynamics in England are consistent with scenarios assuming the waning of vaccine-induced immunity." The waning rate was slow, they estimated, at 0.04% a year, but "sufficient to increase measles burden."

Does waning immunity mean current guidance is outdated?

Despite evidence of protection waning, UKHSA's latest national measles guidelines, published in July 2024, do not advise booster jabs for healthy adults with proof of two doses.

UPTAKE of both doses of the MMR jab was at 84% in England as of 2023-24—significantly below the 95% herd immunity target

Alexis Robert, assistant professor of infectious disease modelling at the London School of Hygiene and Tropical Medicine and lead author of its study, said that although the study "explains why we are seeing an increase in the proportion of measles cases in double vaccinated people in England it's important to note that the biggest risk factor for measles outbreaks by far is low vaccination rates."



Of the 674 laboratory confirmed measles cases reported since the start of the year, 48% (322) have been in London, 16% (111) in the North West, and 10% (65) in the East of England

He added, "The MMR vaccine remains highly effective, and receiving two doses will protect you and those around you against measles infection.

"Even if you are one of the small number of people who get an infection after two doses of MMR vaccine, previous studies suggest measles symptoms in people who have been vaccinated are milder than in people who have not had a vaccine."

Are there other precautions high risk people should take?

Adam Finn, paediatrics professor at the University of Bristol, emphasised that the "problem now isn't waning immunity, it's lack of population immunity due to low two dose coverage." He said that the effectiveness of older MMR vaccines was similar to new ones, because the vaccines haven't changed significantly since they were combined into MMR.

"If enough people get two doses over a sufficient period of time, the viruses die out because they cannot circulate, so the solution isn't to give people more than two doses but to give as many as possible two doses," he said. "That said, if you don't know whether you have had two doses, because records have not been kept or been lost, there's no risk associated with having additional doses—they just aren't strictly necessary."

Finn added that the best way to protect high risk people who may not be eligible for the vaccine "is for everyone else to get two doses."

Should parents whose children have had the vaccine be worried?

"No, they don't need to be concerned. Children who have had two doses of MMR are protected from serious disease and in nearly all cases entirely protected from getting infected at all," Finn said. But he added that children must have both doses to be fully protected and to prevent them from passing the infections on to others, including other children and adults around them who may be vulnerable.

Kate Bowie, *The BMJ*

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THE BIG PICTURE

Scientists demand urgent action to end plastics crisis

As delegates from more than 170 countries gathered in Geneva for this month's UN treaty talks on plastic pollution, world leaders were warned that only decisive and urgent action could protect human health and the planet.

The level of pollution in the planet's waterways is illustrated by these images from Indonesia of people trying to live their lives as the world's discarded plastic floats past their homes.

Richard Thompson, head of the international marine litter research unit at Plymouth University, who first identified microplastics, told the *Guardian*, "We find microplastics in our deepest oceans and our highest mountains. There is evidence of human exposure to them from the womb, throughout our entire lifetime. It is really clear that we need to take decisive action now on a treaty to address plastic pollution."

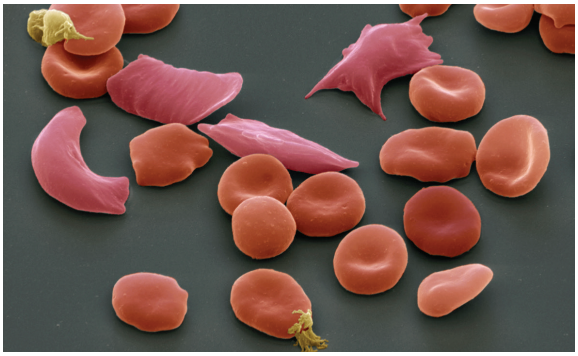
More than 100 countries support legally binding reductions in plastic production and the phasing out of certain chemicals and single use plastic products. But oil states such as Saudi Arabia, China, Russia, and Iran oppose restrictions and are pushing for an agreement focused on waste management and recycling.

Alison Shepherd, *The BMJ* Cite this as: *BMJ* 2025;390:r1654

TIMUR MATAHARI/AFP/GETTY IMAGES

CRISPR therapy for sickle cell disease

Challenges persist despite promising advance



In January 2025, the National Institute for Health and Care Excellence (NICE) approved the use of the gene editing therapy exagamglogene autotemcel (exa-cel, Casgevy) to treat sickle cell disease in England's NHS. Given the potential effect on health inequalities experienced by patients with sickle cell disease, NICE allowed more uncertainty in the evidence and a higher cost effectiveness estimate than it normally applies for NHS approval. The list price of exa-cel (£1.65m per treatment) will be reduced by a confidential discount arranged between Vertex, the manufacturer, and the NHS.

Sickle cell disease is caused by a genetic mutation in the HBB gene for the β chain of haemoglobin, which results in the production of sickle shaped haemoglobin (HbS) and occlusion of the microcirculation. Over the decades, two treatment approaches have reliably altered the course of the disease: hydroxyurea and stem cell transplantation. Hydroxyurea, an oral ribonucleotide reductase inhibitor administered daily, increases fetal haemoglobin (HbF) in the patient's red cells, which prevents polymerisation of HbS, reduces sickling, improves quality of life, and reduces vaso-occlusive crises—acute painful episodes caused by reduced blood flow to deep tissues.[2]

More recently, three new promising treatments—L-glutamine, crizanlizumab, and voxelotor—have been withdrawn because of safety and efficacy concerns arising at the trial stage or a few years after highly publicised launches.[6,7]

Given these challenges, CRISPR (clustered regularly interspaced short palindromic repeats) gene editing offers a different and potentially more effective approach. In this treatment the patient's stem cells are harvested and have their DNA modified in the laboratory. The stem cells are then reinfused after the patient has received myeloablative chemotherapy.[8] DNA modification disables the BCL11A gene, which normally suppresses HbF production after birth.[9] Red cell progeny of modified stem cells therefore produce high amounts of HbF, mitigating the severity of sickle cell disease. Because the technique uses the patient's stem cells, immune mediated complications of transplantation such as rejection and graft versus host disease are avoided. It also removes the need to find a stem cell donor, which is often a challenge for patients with sickle cell disease.[10]

Cost, access, patient selection, acceptability, and potential inequity are key barriers

Access limited to rich countries

However, the promise of cure with CRISPR must be tempered. The list cost of exa-cel is prohibitive, far exceeding that of stem cell transplantation. This places financial burdens on healthcare trusts, especially those with large numbers of eligible patients in their catchment area. Similar scenarios have played out with the introduction of expensive interventions such as recombinant factor VII prophylaxis and eculizumab for severe haemophilia A.[11]

Globally, around 300 000 babies are born with sickle cell disease every year. The highest incidences are in sub-Saharan Africa, India, Middle Eastern countries, the Caribbean, and parts of South America.[12,13] The UK has about 15 000 people with sickle cell disease and 350 births annually.[14] Around 2000 people are likely to be eligible for exa-cel using the criteria >12 years old, recurrent, severe vaso-occlusive crises, suitable for stem cell transplantation, and no matched donor available. The treatment is expected to be offered to about 50 patients a year.[1] This represents a small minority of patients living with sickle disease in the UK. Attention must not be diverted away from the challenges facing the majority of patients receiving standard treatment, including lack of awareness and training among healthcare professionals, stigmatisation, perceived discrimination, poor research funding, inadequate resources for comprehensive care, blood donation shortages, and substandard care varying by geographical location.[15,16]

The severity of sickle cell disease varies over a lifetime, and vaso-occlusive crises become less frequent or disappear in some patients as they grow older.[17] Frequency of crises in early life is therefore an unreliable predictor of the disease trajectory and justification for CRISPR therapy. Myeloablative conditioning, required before cell infusion, involves high dose chemotherapy and poses risks such as infection, infertility, long term organ toxicity, and even death.[18]

Although the evidence for exa-cel in reducing vaso-occlusive crises is convincing, its efficacy in preventing long term tissue damage is unknown, and long term safety data are still evolving.[19,20] Globally, CRISPR therapy is not affordable in the countries in which sickle cell disease is most prevalent. Its introduction in high income countries draws attention away from the development of comprehensive treatment programmes, including transfusion services, in countries where they are most needed. The gloss of CRISPR's introduction threatens to be overshadowed by challenges of cost, access, patient selection, acceptability and potential inequity for the majority of people with sickle cell disease.[20,21]

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EDITORIAL

Side effects of GLP-1 receptor agonists

Caution is needed until the harms are better understood

Glucagon-like peptide-1 (GLP-1) receptor agonists have emerged as a promising treatment for obesity and diabetes. Over the past few years, recognition has grown of their transformational potential for the more than one billion people living with obesity and over 800 million with diabetes globally.[1,2]

However, appreciation of the risks is critical to inform evidence based discussions. The potential harms associated with GLP-1 receptor agonists can be broadly categorised into those that are well known, rare events in which the causal association is weaker or uncertain, and emerging side effects or those with hypothesised links that are still being investigated.

The most common and well known side effects include nausea, vomiting, constipation, and diarrhoea, which occur in up to 40% of people taking GLP-1 drugs.[3] These side effects can make more than one in 10 patients interrupt treatment.[4] Patients sometimes attribute loss of appetite due to nausea as part of the mechanism for initial weight loss and are willing to tolerate this to achieve their weight and health goals.[5]

A small study recently indicated that people may experience reduced taste when taking these medicines.[6] A deeper characterisation of the negative effects of GLP-1 drugs on gastrointestinal function and people's relationship with food is needed, given the potential to exacerbate disordered eating.[7]

Up to 50% of people are estimated to regain weight after discontinuation

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Uncertain correlation

One example of a rarer adverse event with uncertain correlation with GLP-1 drugs is acute pancreatitis. Although it is a relatively uncommon event, acute pancreatitis is serious. However, not all studies have found an increased risk and its causal relation with the GLP-1 drugs is unclear.[8] Another example is thyroid cancer, which is cited as a potential harm on many regulatory labels for GLP-1 drugs.[9] However, observational studies in humans have not shown substantially increased risk of thyroid cancer with use of GLP-1 drugs. Concerns about suicidal ideation also emerged after an investigation by the European Medicines Agency (EMA).[10] Subsequently several studies could not detect a higher risk of suicidality.[11] Another recently published observational study of over 36 000 people taking GLP-1 drugs found no increased risk of suicidality.[12] Hence, there is no clear evidence of the reported increased risks.

Non-arteritic anterior ischaemic optic neuropathy (NAION) is one of the most recent emerging side effects that warrants further research. NAION is the second most common form of optic neuropathy and often causes blindness in adults.[13] Over the past two years, numerous observational studies have suggested GLP-1 receptor agonists increase the risk of NAION. For instance, a single centre study showed a greater than fourfold risk of NAION in people taking semaglutide compared with those not taking a GLP-1 receptor agonist.[14] However, larger studies have indicated smaller increases in relative incidence.[15]

Although GLP-1 drugs can lead to substantial weight loss in adults with obesity, including in those with diabetes, this rapid weight loss is accompanied by a large loss of skeletal muscle mass. For instance, studies in the general population show up to 39% of the weight lost with a GLP-1 drug is from lean mass (a proxy for skeletal muscle), equivalent to around 20 years of age related muscle loss.[16] The long term consequences of GLP-1 receptor agonists on muscle function are not known, but the data raise concern for those who may already be at increased risk of sarcopenia, falls, and frailty, such as older adults.

Clinical implications

More studies are needed to fully characterise known events and clarify the role of potential emerging or rare events associated with the use of GLP-1 receptor agonists. However, even if we understand the research priorities, clinicians may need to ask their patients about the frequency and features of common adverse events. For instance, managing gastrointestinal side effects requires provider training and experience. Although algorithms exist to rule out comorbid conditions or adjust eating habits as part of this management, we have scant evidence that their use mitigates the impact of side effects or reduce discontinuation of treatment.[17]

In the case of sarcopenia, resistance exercise, especially in older adults, may be an important adjunctive treatment to treatment to preserve muscle. Moreover, given that up to 50% of people are estimated to regain weight after discontinuing treatment in real world settings, preserving muscle mass with exercise rather than the usual fat led regain may be of particular interest.[4,18] Finally, for adverse events that are more difficult to study because of their low incidence (eg, NAION), patients need to be advised of the small but still clinically significant risk with use of the GLP-1 receptor agonists. With the large numbers of people potentially eligible for treatment with a GLP-1 receptor agonist, better evidence on harms is needed urgently.

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DATA BRIEFING

Immigration crackdown is a threat to the NHS workforce, data show

Health and social care have been able to fill many vacancies in recent years by relying on workers from overseas—with more than two thirds of newly registered doctors, and almost half of nurses, having trained outside the UK. The latest plans to stem the flow of people are therefore a concern, write **Lucina Rolewicz and colleagues**

The prime minister introduced his government's immigration white paper this May in dramatic fashion, promising to "close the book on a squalid chapter" of UK history: the period of elevated immigration that began in 2021.[1,2]

That chapter of history, though, created the opportunity for the NHS to fill a large number of vacancies across the clinical workforce with overseas trained staff. Governments of the period hailed the increases in workers as a triumph.[3]

Data on immigrant workers in health and social care are far from perfect, but they demonstrate the enthusiasm with which migrant workers were added to the workforce—and what the white paper's measures to clamp down on migration, many put into effect on 22 July, could mean at a difficult time for health and care.

Overseas clinicians in NHS rose rapidly after 2020

For a long time, back to the earliest days of the NHS, the UK medical profession has grown through doctors joining from abroad. Even 20 years ago almost 40% of doctors registered in the UK had trained abroad.[4]

But the period since 2020 has seen a striking acceleration. Of the 28 956 doctors newly taking up or returning to a General Medical Council licence in 2023, more than two thirds had trained outside the UK, of whom 3158 (11% of the total) had trained in the European Union and 16 471 (57%) outside it (fig 1).

Even 20 years ago almost 40% of doctors registered in the UK had trained abroad

Nursing and midwifery show a similar pattern. Of the professionals who joined these registers in the six months to September 2023, almost half (15 035 of 30 085) were trained outside the UK, and the proportion was still over 45% in March 2025 (fig 2). Again, these were largely people trained outside the UK and the EU, unlike an earlier boom in staff trained in Europe that was cut short by the Brexit referendum in 2016 and the subsequent introduction of stricter language tests. The number of UK trained joiners has been more stable, at around 12 000 to 15 000 a year.

The NHS's level of reliance on nursing staff from abroad is greater than in other countries. In 2022, among OECD states publishing comparable data, only Switzerland and New Zealand exceeded the UK's 21% proportion of nurses trained in other countries (fig 3)—both countries with much smaller populations and full agreements with their neighbours to mutually recognise qualifications.

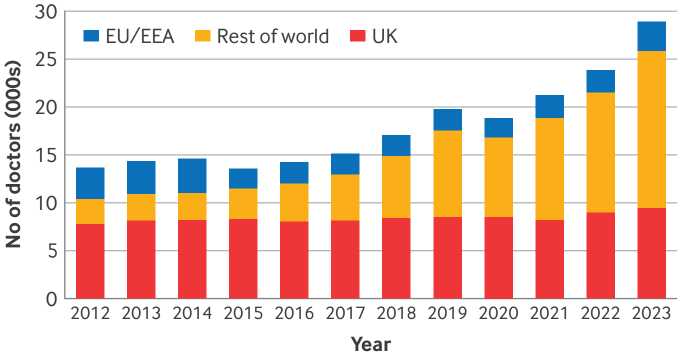


Fig 1 | Doctors taking up or returning to a UK licence to practise, by place of training (Source: GMC[5])

Health and care visa boosts migrant care worker numbers

Care workers have accounted for the largest numbers of international recruits to the UK health and care system since the covid-19 pandemic and the 2020 introduction of the health and care visa. Data on care workers are much more difficult to come by, as there is no professional register in England (unlike in the other UK countries), and the Home Office changed its categorisation of care roles during this period.

The total number of applications for the visa began to rise sharply from early 2022, when care workers were made eligible for immigration (fig 4). At the time, the government said that the change "will make it quicker, cheaper, and easier for social care employers to recruit eligible workers to fill vital gaps."[11]

Two years later, though, there was a sharp change of course. In 2023 the Home Office increased scrutiny, causing a drop in numbers.[12] The next year the government banned care workers from bringing family members, and visas were restricted to care workers being sponsored by registered care providers.[13]

This increase and decrease were reflected in the rate at which immigrant staff actually joined care roles in English social care, as indicated by annual and quarterly estimates produced by Skills for Care, the strategic development body for the adult social care workforce in England.

These figures cover only the independent sector in England but indicate that heavy international recruitment—followed by a decline—was a reality for employers. The number of vacancies dropped noticeably from 10% in 2022-23 to 8% in 2023-24 and then 7% in May 2024, where it remained at the end of last year.

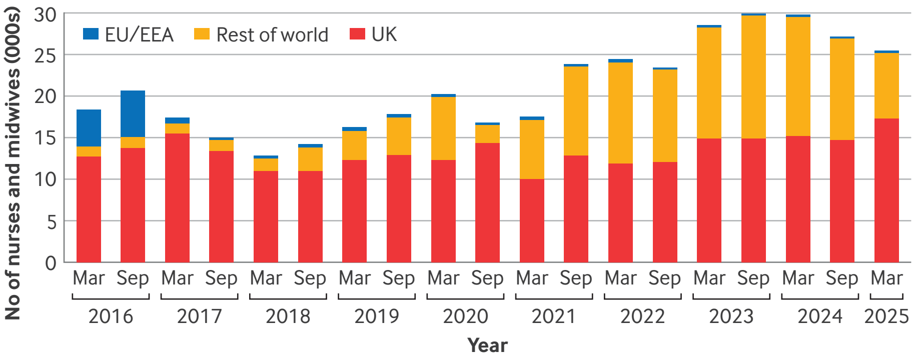


Fig 2 | Nurses and midwives joining UK professional register, by place of training (Source: NMC[6])

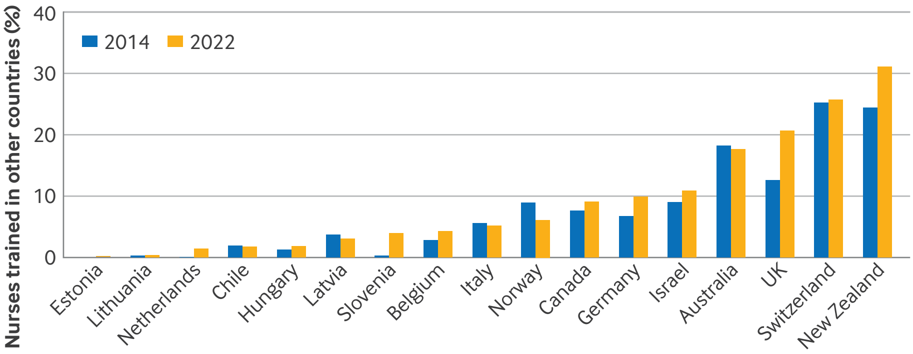
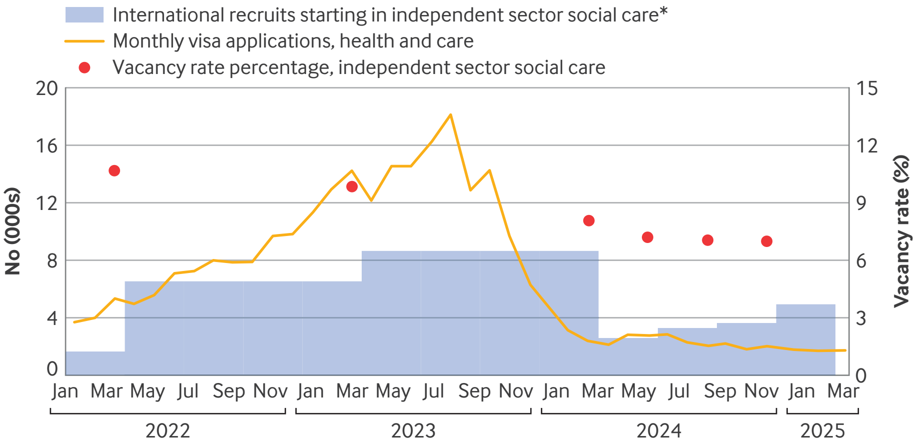
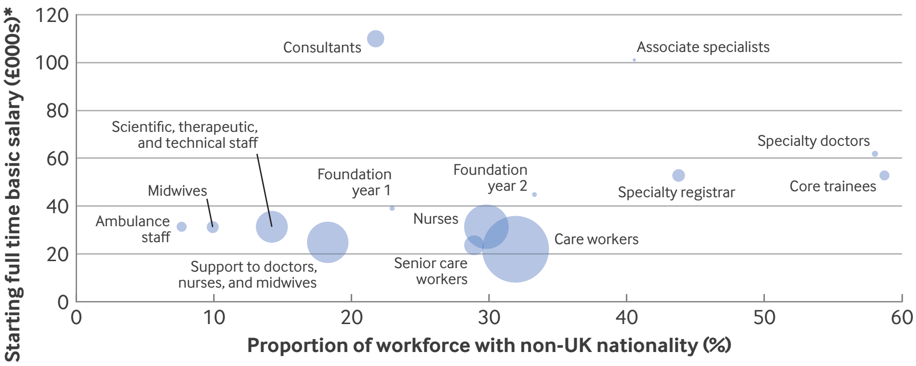


Fig 3 | Proportion of nurses in OECD member states trained in other countries (Source: OECD[7])



* Annual averages to 2023-24, then quarterly averages 2024-25

Fig 4 | Health and care visa applications (England) versus social care international recruits (UK) (Sources: Skills for Care,[8 9] Home Office[10])



*2025-26 figures (2023-24 for care workers)

Fig 5 | Proportion of healthcare workforce with non-UK nationality versus salary (Sources: NHS England,[14 15] Skills for Care[16])

Effect of immigration white paper

The May white paper promised new restrictions. Two key shifts have already been implemented for new applicants since 22 July. A requirement of university level qualifications for job roles will cut off many NHS clinical support roles, and there is an outright block on new applicants to the visa route for care worker roles in social care.

Perhaps the widest ranging change in the white paper was set in bold font and underlined but without a number to give it meaning: "Salary thresholds will rise."

Figure 5 shows the relative size of different health and care workforce groups, the proportion holding non-UK nationality, and their starting basic salaries (full time). The minimum salary level required to qualify for general skilled worker visa sponsorship was previously set at £38 700 generally and £30 960 for jobs in shortage. On 22 July this was increased to £41 700. Until earlier this year health and care workers could receive visas as long as they were paid on national pay scales. This route too now has a pay threshold, currently set at £25 000: whether this will rise, and by how much, is unclear.

Already, the general threshold lies well above starting salaries for nursing and allied health professional roles—hindering recruitment wherever they are not paid against national scales (in the outsourced health and social care sectors). Even among those on national pay scales, NHS support workers' starting salaries now fall below the lower threshold. Many other groups would be captured quickly if it rose.

What is concerning is that it is not clear that the underlying reasons for reliance on recruitment from overseas have been dealt with. The 2023 workforce plan for the NHS in England promised greater domestic training but was not as clear about how to make sure staff did not leave,[17] and the health service continues to face increasing demands to deliver more care and to build up certain services rapidly.[18 19]

Meanwhile, there is no plan at all—and domestic recruitment continues to fall short—in the very area clamped down on most: social care.

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BMJ INVESTIGATION

OUR FUTURE HEALTH **Consent, clinical risk, and industry issues plague the UK's biggest ever health research programme**

The UK's flagship study promises breakthroughs, but beneath an NHS branded facade, critics are asking who really benefits from this vast database, heavily backed by industry and government. **Margaret McCartney** and **Deborah Cohen** investigate

As a research programme, Our Future Health (OFH) is a runaway success—at least on paper. Described by one observer as the UK Biobank "on steroids," OFH has become the UK's largest ever health research programme, recruiting more than 1.5 million participants in just two years, with a goal of reaching five million.

Its scale and ambition are praiseworthy, especially for enrolling people from ethnic minority groups and low income backgrounds—communities often overlooked in medical research. Participants are told that their data, along with access to their NHS records, will help researchers make discoveries about conditions such as dementia, cancer, and heart disease. Researchers will use only deidentified data, for purposes only for "the public good." Participants may later be asked whether they want personal feedback from their samples, including their DNA, that could "reveal health or disease risks."

Behind the headline data, however, concerns persist. To investigate the major issues *The BMJ* has spoken to the programme's chief executive, Raghib Ali, as well as its critics.

The first issue is consent. Volunteers can sign up through community pharmacies, mobile units, the blood transfusion service, or an NHS branded invitation promising new insights into their blood pressure and disease risk. In exchange for personal details and blood samples they receive a £10 shopping voucher. Privacy campaigners have questioned whether participants truly understand how their genetic material will be used and whether the gift voucher could amount to undue inducement. Others warn of the risks associated with returning complex polygenic risk scores of dubious clinical utility, especially in the absence of a clear NHS plan for their use.

I think people are reassured to know I'm an NHS doctor. This is not a commercial endeavour. This is a charity
Raghib Ali

Then there are concerns about clinical risk and overdiagnosis. A row erupted after finger prick cholesterol tests used by OFH produced false positives in around 10% of cases, alarming patients and frustrating GPs. The test was eventually dropped. Clinicians have also raised concerns about the ongoing use of unvalidated devices for detecting irregular heart rhythm, which have prompted urgent GP referrals.

There's also the question of OFH's transparency and commercial interests. Although not an NHS initiative, the programme heavily features NHS branding, prompting confusion about its identity. Meanwhile, industry partners can pay as much as £15m to become a "member," a status that gives them exclusive access (among other large commercial organisations) to apply to use OFH data. This arrangement has prompted questions about the commercial interests of an initiative positioned as a public good.

When the programme was launched, says Ali, the vision was to shift healthcare away from late stage treatment and towards early detection, early intervention, and prevention. Is that vision still alive?

If you look at the marketing materials people think it's an NHS project, and it's not
Sam Smith

A tenner for your DNA?

"People have no real idea what Our Future Health is," says Sam Smith, policy lead at medConfidential, an organisation focused on confidentiality and consent in health and social care. From the outset, he says, people could be forgiven for thinking that this was an NHS programme.

"If you look at the marketing materials people think it's an NHS project, and it's not, even though they've got the logo everywhere," says Smith, adding that the consent form doesn't clearly state that companies can pay to apply for access to participants' genetic data. "They've done enough to get it through NHS ethics approvals, but what we want is informed consent."

Paul Martin, professor of the sociology of science and technology at the University of Sheffield, agrees: "UK Biobank recruitment took years; this has been at an incredible speed. They [OFH] have done this by offering a health check at the same time, so this brings issues of parity—offering tests that can't be easily got in the NHS. And they've used vouchers to participants: that needs close ethical scrutiny."

In December 2023 OFH began offering the £10 shopping voucher to new participants. This incentive, it has claimed, had a "significant effect" on recruitment, especially among under-represented groups.

But the offer of cash presents a tricky

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question: is the incentive inducing people on low incomes to take part in a scheme without being fully aware of what they're signing up for? OFH is keen to emphasise that participants' data are not being sold, pointing to its website that says researchers can't download—"walk away with"—identifiable data, and it has "strict rules and processes that control who has access to the data." But perceptions may be harder to control. On Trustpilot, a consumer review site, concerns have been surfacing. One comment said, "Halfway thru' filling in sign-up form, I realised I'm selling ALL my data (which I'm usually so careful of online!)—for a £10 supermarket voucher?!" Another said that the programme was "getting your DNA for a tenner!" Of 169 reviews, a large number were negative.

Ali—drawing on his own background, where paying transport costs to take part in a research project would have been a deterrent—says that the vouchers are meant to ensure that no one is excluded. OFH did a cluster randomised trial to test what impact the offer would have on participants, and people can choose whether to receive the vouchers or not. OFH's ethics committee agreed that the vouchers should be offered, Ali adds. So far, it's mainly younger people who have taken up the voucher.

But questions still linger, especially around transparency. Martin, an expert in public trust and data governance, says that explanations of how data will be used must be made much clearer. "We know from research that people are concerned about who is using their data," he says. "People are generally happy to give their data if they think it's benefiting the NHS. But if they're giving it to private companies they are more ambivalent. This needs to be made explicit in the sign-up process."

In the small print of the consent form, a clause lists the kinds of researchers who are eligible to gain access to the health data, including "academic organisations, charities or companies, in the UK or overseas."

People are generally happy to give their data to the NHS, but are more ambivalent about private companies
Paul Martin

Data given away too freely?

Helen Wallace, director of GeneWatch UK, warns that OFH participants are being asked to give consent without fully understanding the implications—a position made more complicated since new legislation was introduced in June this year.

The Data (Use and Access) Act 2025 redefines consent in a way that makes it harder for individuals to object to commercial uses of their data. The new law would allow the police access to genetic data for "detecting, investigating or preventing crime." Previously, a court order was required to justify access, providing a stronger safeguard. It's no longer clear whether that will be the case.

None of this is clear to participants, Wallace argues—they're given a link for further information. "Fully informed consent means the study should be upfront about the downsides of

Clinical risk and overdiagnosis: "People thought they were going to drop dead of a heart attack"

In late 2023, GPs began noticing something strange. Joe McManners, an Oxfordshire GP, was inundated with cholesterol queries from local participants in the Our Future Health (OFH) programme, some with high readings of 10-11 mmol/L. "We knew they were wrong, he says, "as we had previous results for a lot of these patients and they were clearly false positives."

The results, generated by finger prick tests from an OFH mobile clinic, caused a large spike in work at the practice. "It created a lot more clinical work and stress for patients," says McManners, describing how tests had to be repeated and patients reassured.

"People were thinking they were going to drop dead of a heart attack," he says, "and at that time there was a lot of radio coverage on how Our Future Health was going to save lives by finding previously unknown high cholesterol. It may have been encouraging people to take part, but the results weren't reliable."

In southwest England, GPs were having a similar experience. One doctor working in a large town, who asked not to be named, told The BMJ that they were so concerned about OFH that, with the support of their local medical committee, they complained to the Health Research Authority.

The GP also described confusion among patients who believed that taking part in OFH meant that they had already completed an NHS Health Check: "Some of our patients didn't take up their invitation for a health check because they thought they had already done this with Our Future Health."

Complaints

OFH eventually dropped the point-of-care cholesterol tests at the end of 2024. A spokesperson defended the initial approach, saying the data were necessary for future research.

While OFH insists that it isn't part of NHS care and doesn't provide diagnoses, its promotional material tells participants that they can "find out more about [their] health now" and can in future receive insights into their genetic risk for major diseases.

The Health Research Authority, responding to the complaint, was satisfied that OFH had taken "all reasonable actions". OFH admitted that, over a nine month period, it had received 73 complaints from participants and 41 complaints and questions from GPs and local medical committees.

Separately, participants were also wrongly flagged as having heart rhythm disturbances by automated blood pressure machines with rhythm detection features. A small number were told to see a GP within 24 hours.

OFH says that only "a very small" number of such cases occurred, "significantly less" than the complaints about cholesterol tests.

Ali says that OFH has a "duty of care" to inform participants if something is found in the research context that "may be exceptionally harmful to health." He emphasises that it is not a screening programme or a diagnosis service.

building a DNA database of five million people,” she says.

OFH insists that it would release data only under a court order and will review its position in the light of the new law. Ali says that OFH is non-profit making and that any profits are returned to the charity.

“I think they’re reassured to know I’m an NHS doctor,” he says. “This is not a commercial endeavour. This is a charity . . . hopefully it will help their health in the future. Once they’re reassured of the motivation, they’re generally much happier to take part.”

Scientific utility overstated?

Some experts are sceptical about how OFH will add to future research. Clare Turnbull, professor of translational cancer genetics at the Institute of Cancer Research in London, notes that the UK Biobank already offers a strong cohort with long term follow-up. “UK Biobank was meticulously designed, recruiting participants in middle age, with two decades of follow-up, extensive biosampling, and deep phenotyping,” she says, adding that it’s still not clear what novel insights OFH will generate.

Ali says that the Biobank was set up as a purely observational study without the opportunity to go back to participants—unlike OFH. Observational studies are already using OFH data collected to date, but crucially, from next year, researchers will be able to go back to participants to conduct other kinds of research.

One use case Ali cites for this is prostate cancer screening: researchers could use genetic risk scores to identify men at high risk and could trial targeted interventions. OFH data will allow testing of more precise screening approaches for various diseases that go beyond age based guidelines and towards risk profile based screening.


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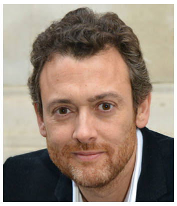
Richard Sullivan, professor of cancer policy and global health at King’s College London, offers a blunt assessment, citing a lack of evidence that people change their health behaviour on the basis of genetic risk scores. “This is about as far away from health as you can imagine. This is a science platform that will largely help industry,” he says. “You want to get people out of poverty? Get them into decent housing and [allow them to] have a decent diet.”

UK Biobank was meticulously designed, recruiting participants in middle age, with two decades of follow-up
Clare Turnbull

Stuart Hogarth, a sociologist and lecturer at the University of Cambridge, warns of blurred lines between research and clinical practice. For example, participants were given instant cholesterol results, and those with heart rhythm disturbances were told to see their GP urgently (see box). Hogarth says, “Giving people results collapses the distinction and has consequences—for example, GPs’ time being wasted.”

Giving people results has consequences—for example, GPs’ time being wasted
Stuart Hogarth



This is about as far away from health as you can imagine
Richard Sullivan

While OFH insists that participants are told that they’re entering a research project and not a diagnostic service, the message may not be cutting through. A 2023 BBC article described people being invited to have a series of “health checks” at mobile health centres, often in supermarket car parks.

Transparency

Despite the use of NHS branding on its invitations, OFH isn’t part of the health service. It’s a charity, governed by a board of trustees and funded by a mix of public bodies, private companies, and charitable organisations.

The board is chaired by John Bell, president of the Ellison Institute of Technology, one of the charity’s private partners. The charity also has a spin-off company responsible for licensing and industry deals, chaired by Harpal Kumar, president of international business and biopharma at Grail, a US company running a £150m trial for the NHS for early cancer detection. Kumar’s dual role concerns Hogarth, who asks, “How can it be right to give a key role to someone who works for one of the many competing firms in the space?”

Data access is currently restricted to founding members, academic organisations, charities, and small enterprises. Applications are reviewed by an independent committee, with data held in a private trusted research environment. Large companies must pay £15m and become an industry partner in order to apply for access. This is not spelt out in the consent form. A patient participation sheet explains that funders of OFH include the life science industry and provides a website link for further details. Ali says that the hybrid funding model was required by UK Research and Innovation to ensure commercial engagement and to support the development of new diagnostics and treatments.

Clearly, OFH is a big achievement—recruiting, within two years, many more participants than UK Biobank. Its leaders promise that it will change preventive healthcare and speed up the discovery of new diagnostics.

OFH participants are told that they’re part of a national mission to change health. But the confusing branding, shopping vouchers, and promises of health “insights” risk obscuring the industry involvement behind the scenes. And data that participants eventually obtain about their own health may not be useful to them.

As the programme expands, its success will be measured not just in numbers of sign-ups and scientific papers but in transparency, the utility of data given to participants, and whether participants trust how their data are used.

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WHY I…
teach piano

Consultant surgeon Sam Turner speaks to **Erin Dean** about how playing and teaching piano helps him destress and brings him joy

Playing the piano has been a source of joy and peace since childhood for consultant renal transplantation surgeon Sam Turner. For the past 12 years he has found a new passion in music, by teaching the piano to others.

Turner, who works for North Bristol NHS Trust, started playing the piano at the age of 7, after going along to lessons with his mother, who was also learning to play. “I spent many, many hours just playing and along the way completed all eight grade exams while at school,” he says.

At 18 Turner started medical school, leaving home and the piano. In his fourth year, however, when he was missing playing, he was given an electric piano. This piano moved with him 16 times over the next 20 years as he—later with his radiologist wife, Sananda, and their three children—moved around during training.

“When I’m playing, I don’t think about anything else; it is like I am within the music, part of it. At times I have full concentration and focus, the complete removal of all other thoughts,” he says.

Music had always been a solitary pastime for Turner until one day, while they were living in Brighton about 12 years ago, his wife asked for a lesson. Impressed by his teaching, she encouraged him to become a tutor. The first students for the then resident doctor included a young tattoo artist, a hospital cleaner and his 8 year old daughter, and another doctor in training.

Turner found he loved giving the lessons, sharing his passion for music and finding out what would inspire his students. One wanted to play the Beatles and another the music from a video game.

“Then of course I rotated away from Brighton, so I had to leave my students behind,” he says. There was a gap of a few years in teaching as there were more moves before the family settled near Bristol.

For his 40th birthday, Turner treated himself to a beautiful Bechstein piano from 1897. “It was incredibly exciting to have this lovely old piano in the house. And I thought maybe I can earn some of the price of it back.”

When I’m playing, I don’t think about anything else

After advertising online a father and his teenage daughter and young son started coming for lessons every Sunday.

“There are moments when you realise that they are learning—and that’s amazing. When a player moves their thumb under their hand in a particular way in a piece of music, suddenly I think: ‘It’s happening’.”

He is now teaching an engineer from his local village, who has just taken and passed his grade 1 exam. “It just shows you can come from any walk of life and start learning an instrument at any age, it really is never too late,” he says.

TIPS FOR GETTING INTO TEACHING MUSIC

- Make sure you are qualified—passing the Associated Board of the Royal Schools of Music grade 8 exam in an instrument is sufficient to teach it
- Do it for the joy it will bring—unless you are working at it full time it won’t turn a huge profit
- Consider marketing to recruit students—social media, word of mouth, parent gatherings, or schools
- Structure—choose or make a lesson plan that you are familiar with and that works for the student; carefully consider exams
- Reflection—make detailed notes on students and strongly encourage regular practice to see improvements

His musical students bring a great deal of creativity to their interpretation of music and teach him a lot. Turner also sees some crossover with teaching doctors.

Teaching junior colleagues is a fundamental part of being a doctor and a regular part of Turner’s work. “It is quite a challenge to supervise and teach surgery while also encouraging creativity, but this is where the future of surgery is going to come from,” he says.

Teaching and music also provide Turner with an escape from the intense job pressures that all doctors will recognise.

“In the current NHS climate there is constant stress associated with being a clinical lead, in my case the lead for transplantation,” he says. “Playing and teaching the piano takes me so far away from this and brings me such joy that it can transform me completely. I can then return to battle refreshed and with a new sense of calm.”

Erin Dean, London

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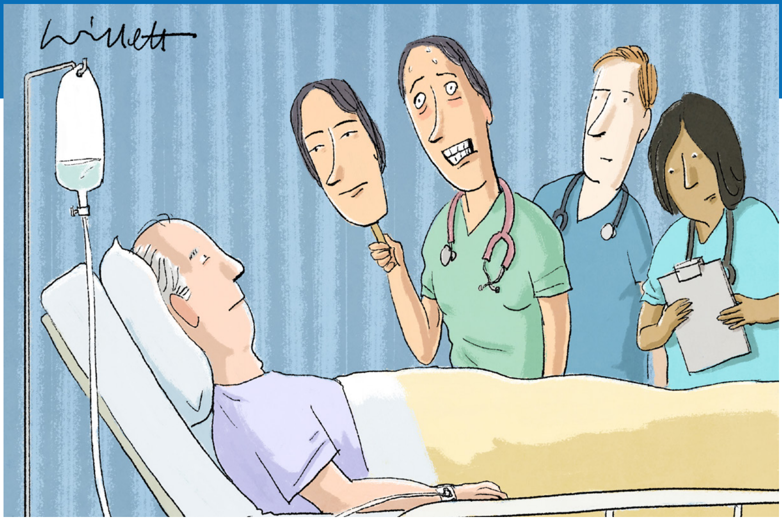

CAREERS CLINIC

How do I deal with imposter syndrome?

Doctors at all career stages struggle with imposter syndrome. **Elisabeth Mahase** hears how they tackle it

Don't wallow in self-doubt

Precious Oluwaniyi, 4th year medical student

"Unfortunately, imposter syndrome is something I've struggled with—even before applying to medical school. From feeling unworthy of getting the offers that I got, to feeling inadequate on the wards when surrounded by medical students with already well decorated portfolios, I constantly had a sickening feeling that my place in the profession was a mistake—and that one day I'd be caught red handed as a fraud. I had to change my perspective and tell myself a few things to get this narrative out of my head.

"Firstly, I wrote out the facts. While a CV is usually used to share your accomplishments with potential employers, I decided to use it and my portfolio as a self-boosting mechanism, a museum of all my professional accomplishments. Reviewing my CV and seeing all the great things I'd done reminded me that I was more than qualified to be in the positions I'm in. It also reminded me that feelings don't always equate to facts, and something that's concrete beats the negative image I'd created in my head.

"Secondly, I talk to the people around me. Telling my colleagues about how I feel lets me see that other people feel the same, and it's normal sometimes to not feel enough for the role you're in.

"One piece of advice a colleague gave me was that, instead of wallowing, use the feeling as a prompt to find something you can improve. But never think you don't deserve your place. You may feel like an imposter, but your journey, your work, and your growth are the evidence that you belong."

Separate fact from feeling

Bethan Griffith, consultant acute physician

"Someone once said to me after an emergency call: 'I was quite worried, but you seemed so calm.' What they didn't hear was my internal monologue during what felt like the longest 20 seconds of my career. I'd given adenosine to a patient with supraventricular tachycardia. Shortly after administration, the monitor showed asystole. A 20 second pause. I remember staring at the screen thinking, 'The pause is never this long—was that the wrong dose? Why didn't I wake up the cardiologist? When do I start chest compressions?'

"To the team, I looked calm. Inside I felt like a fraud. Imposter syndrome isn't just about being nervous on your first shift as a registrar, being worried that you can't answer the medical students' questions, or a fleeting lack of confidence. It's a persistent sense that I'm here because of luck, and that I've bluffed my way to the top and that sooner or later, someone might realise.

"Imposter syndrome thrives in silence, so I started talking about it. I once admitted to a senior colleague that I didn't quite know how I got here. Their response was, 'Oh, I feel like that all the time.' That moment of honesty was liberating.

"As a result of this, I own my uncertainty. Medicine is full of grey areas and guidelines help, but clinical judgment is messy. I separate fact from feelings. I recognise that the goal isn't perfection, but to practise with empathy, to learn, and to know when to ask for help. Feeling unsure doesn't mean you're incompetent—it often means you're aware of complexity and that you care. I now keep an email folder with positive feedback – not just for my appraisal or an ego boost, but as objective evidence for my inner critic that others see value in what I do."

Understand you're not alone

Joe Home, public health registrar

"As resident doctors we frequently find ourselves in new work environments, surrounded by people who seem to have all the credentials, confidence, and knowledge to perform their roles flawlessly. This has led me to question my own capabilities. I now know this feeling has a name: imposter syndrome. For a long time, it led me down a path of presenteeism, feelings of inadequacy, and, inevitably, burnout, all driven by a fear of being exposed as a fraud.

"Rotational training can put us at a higher risk for these feelings. Just as you start to build the confidence, trust, and relationships that anchor you in a new role, you're moved on. This constant cycle of starting over can leave you feeling perpetually on the back foot, struggling to prove your worth again and again.

"A turning point for me was when a senior colleague told me that imposter syndrome reflects the environment, not the individual. This resonated deeply. It's a systemic problem, not a personal failing. A good supervisor should be able to spot a trainee who is struggling and offer support. After all, we are doctors in training; we are here to be trained, not to be perfect.

"The professional expectation of reflection, as emphasised by the General Medical Council, can also complicate things. While it's a cornerstone of good practice, for some it can become a tool for hyper-criticality, a constant focus on our perceived flaws. We should be cautious of attempts to blindly eradicate imposter syndrome's contributing factors, however. The opposite of imposter syndrome isn't confidence, it's a cavalier arrogance."

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