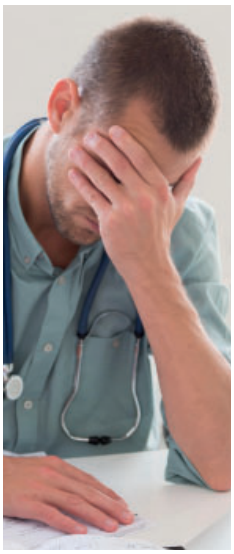
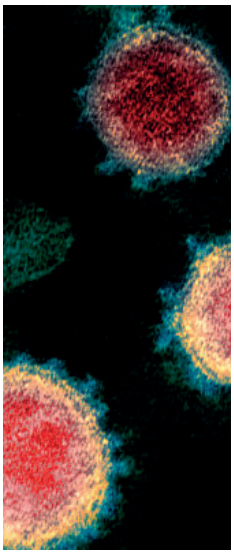
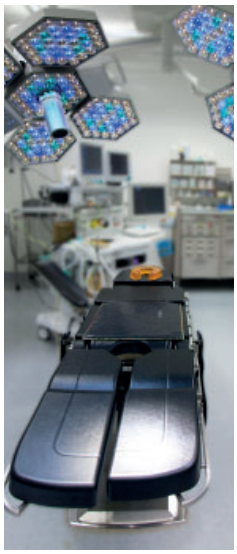
this week

LOCKDOWN INJURIES page 45 • **ARMY MEDICS** page 46 • **NHS PRESSURES** page 48




Drive to boost workforce continues to stall

Medical workforce numbers in England are not seeing sustained increases, despite the government's attempts to boost staffing in the NHS, latest figures have shown.

The numbers were released as the NHS continued to grapple with an ongoing staffing crisis, which is being exacerbated by high levels of absence stemming from the omicron variant of covid (see pages 46-49).

England had a total of 35 991 full time equivalent (FTE) GPs working (and a head count of 45 303) at the end of November, NHS Digital reported. This represented a drop of 127 doctors from the FTE total a month earlier and of 153 in the head count.

Earlier in 2021 numbers had risen, with 1265 (3.6%) more FTE GPs since the end of June, from 34 726 to 35 991, and a rise in head count from 44 386 to 45 303. However, doctors' representatives have said the overall picture is poor, especially as the government has repeatedly pledged to boost numbers significantly.

In secondary care, the latest workforce figures show there were 695 more FTE doctors last September than in August, of whom only two thirds were fully qualified.

The number of FTE secondary care doctors rose by 9.7% from 116 079 in September 2019 to 127 319 in the same month in 2021. But the BMA said this wasn't enough to offset the vacant posts in England, which stood at 8333 last September, 15% higher than the 7262 a year earlier.

Vishal Sharma, chair of the BMA's Consultants Committee, said last autumn the BMA estimated that, when compared with the most similar EU neighbours, "England was short of 50 000 doctors, and with around six million patients waiting for operations and procedures—and too few doctors—those on the lists will wait longer and more will be added every day."

He said, "The impact on the existing workforce should not be underestimated. Yet again, we see more than a quarter of sick days in August, the equivalent of half a million staff days, were for mental health reasons. With the rapid spread of omicron, covid related absences are pushing the whole system to the brink."

Kieran Sharrock, deputy chair of the BMA's General Practitioners Committee for England, said, "For years GPs have been stretching themselves more thinly. In November, practices booked a record 34.6 million appointments. Doing more with fewer staff is not safe and not sustainable."

Adrian O'Dowd, London

Cite this as: *BMJ* 2022;376:o26

The BMA's Vishal Sharma (centre) and Kieran Sharrock (right) say the workforce shortfall is having a huge effect on staff and patients

LATEST ONLINE

- Omicron: South Africa says fourth wave peak has passed as it lifts curfew
- Former advisers urge Biden to adopt new pandemic strategy and learn to live with covid
- GP practices can access "contingency supply" of lateral flow and PCR tests

SEVEN DAYS IN

Babies who were born in covid pandemic show slight development delays

Babies born in the first year of the pandemic scored slightly lower on a developmental test at 6 months old than those born just before the pandemic, a small study has found.

The research, published in *JAMA Pediatrics*, found no sign to suggest that the deficits were linked to exposure to SARS-CoV-2 infection in the womb. Instead the researchers thought that mothers' stress may have had a role.

The cohort study of 255 infants born between March and December 2020 at Columbia University Irving Medical Center in New York included 114 who were exposed in utero to covid and 141 who were not. Most of the mothers experienced asymptomatic or mild disease and were infected in the second or third trimester.

The researchers analysed data from the Ages and Stages Questionnaire and compared the data with those from a cohort of 62 infants born at the centre before the pandemic.

Exposure to SARS-CoV-2 in utero was not associated with significant differences in any subdomain on the questionnaire, regardless of infection severity or timing. But infants born during the pandemic had significantly lower gross motor, fine motor, and personal-social scores than the historical cohort, whether or not mothers contracted the virus.

Jacqui Wise, Kent Cite this as: *BMJ* 2022;376:o29

Covid-19

Long covid affects 1.3 million in UK

An estimated 1.3 million people in the UK had long covid in early December 2021, up from 1.2 million at the end of October, said the Office for National Statistics, which calculated the figure from a sample of households in the four weeks to 6 December 2021. Seven in 10 (892 000) had covid-19 at least 12 weeks previously, and 40% (506 000) had first had the virus at least a year earlier. Fatigue was the most common symptom (reported by 51%), followed by loss of smell (37%), shortness of breath (36%), and difficulty concentrating (28%).

PCR test requirements are eased in England

People in England who test positive for covid-19 on a lateral flow test but are asymptomatic will not need to have a polymerase chain reaction test to confirm the result from 11 January but should immediately self-isolate, the government announced. However, anyone with symptoms and people who are eligible for the £500 Test and Trace support payment should still do confirmatory PCR testing. The high prevalence of covid in the UK means that the chances of a false positive result from a lateral flow test are very low, the government advised.

Vaccination in pregnancy is safe, large study finds

A US study of 46 079 pregnancies found that vaccination against covid-19 did not increase the risk of preterm birth or being small for gestational age. Just over one in five pregnant participants (21.8%; 10 064) had received one or more vaccine doses, mainly Pfizer-BioNTech or Moderna. The authors, from Yale University, concluded, "Findings from this retrospective, multisite cohort of a large and diverse population with comprehensive data on vaccination, comorbidities, and birth outcomes add to the evidence supporting the safety of covid-19 vaccination during pregnancy."

Medical education

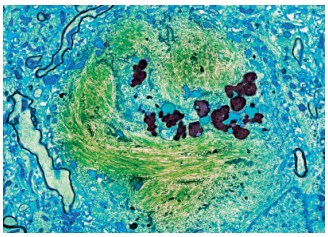
Surgeons raise funds for diverse image library

The Royal College of Surgeons of England launched an appeal to raise £20 000 to help develop a medical media library that reflects population diversity in terms of skin colours, body types, genders, ages, and abilities, to help improve medical education and training. The college president, Neil Mortensen, said, "We want to ensure that surgical teams and the wider medical profession have access to images that are diverse, inclusive, and accurately reflect themselves and the patients they serve."

Dementia

Act now to reduce case burden, study suggests

By 2050 some 153 million people worldwide are expected to have dementia, up from 57 million in 2019, showed a modelling study of 195 countries published in *Lancet Public Health*. The smallest estimated increases are forecast in high income countries of the Asia Pacific (53%) and western Europe (74%), and the largest growth in cases is predicted in northern Africa and the Middle East (367%) and in eastern sub-Saharan Africa (357%). The lead author, Emma Nichols of the University of Washington in Seattle, said that preventive strategies would pay remarkable dividends. "This means scaling up locally appropriate, low cost programmes that support healthier diets, more exercise, quitting smoking, and better access to education," she said.



Treatment backlog

Deal with staffing to tackle waiting lists, say MPs

Tackling the UK's healthcare backlog caused by covid is a "major and unquantifiable challenge" that would rely largely on good workforce planning, warned the Commons Health and Social Care Committee. It called on the government to come up with a national health and care recovery plan by April 2022 that goes beyond the elective care backlog to deal with emergency care, mental health, primary care, community care, and social care. The committee also repeated its call for annual reports on workforce projections for the next 5, 10, and 20 years, including whether enough staff are being trained.

MEDICINE

Vaccination

Vaccine is compulsory for over 50s in Italy

Italy made it compulsory for people aged 50 and over to be vaccinated against SARS-CoV-2 with immediate effect, and from 14 February it will require them to show a health pass proving that they have been fully vaccinated or have recently recovered from covid. Italy recorded 189 109 new infections on 5 January and 231 deaths, bringing its pandemic death toll to 138 276, the highest in Europe after the UK. Around 78% of Italy's population are fully vaccinated against the virus, and 36% have received a booster.

Covid vaccines are now mandatory for Italians over 50

Research

Air pollution may increase risk of covid infection

Long term exposure to ambient air pollution may increase the risk of covid-19 infection, showed research published in the journal *Occupational & Environmental Medicine*. This association was strongest with particulate matter, showing an average annual rise of 1 µg/m^3 linked to a 5% increase in the covid infection rate. This equated to an extra 294 cases per 100 000 people a year, in the study of residents in the north Italian city of Varese. While further research is needed to confirm cause and effect, the findings should reinforce efforts to cut air pollution, said the researchers.

Diagnostic testing

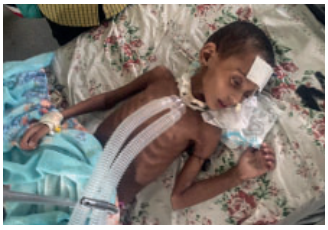
Theranos founder is convicted of fraud

Elizabeth Holmes, who founded the US health technology company Theranos and aimed to "democratise healthcare" with a machine read fingerprick test that would render current blood tests obsolete, was found guilty on four counts of fraud and conspiracy to commit fraud. Theranos collapsed when the testing technology was shown to be largely useless or unreliable. All but 12 of more than 240 tests processed at the company's headquarters were actually put through standard commercial diagnostic equipment, as its proprietary "Edison" machines were inaccurate. Holmes, 37, faces the likelihood of several years in prison. She is expected to appeal.

Tigray conflict

Hospitals lack basic necessities, say doctors

Ethiopia's bitter civil war, now in its 14th month, has left hospitals in the country's northernmost region of Tigray denuded of basic

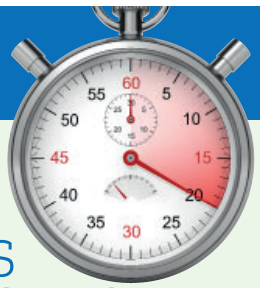


medicines and even bandages, bringing residents to the brink of starvation, said reports from aid agencies and staff from the Ayder Referral Hospital in Tigray's capital, Mekelle. They said that the government has deliberately obstructed relief supplies. Doctors shared records from 117 patient deaths that they said would have been prevented under normal conditions. They said that scanners no longer worked, that surgery had been "almost impossible" for the past six months, and that at least 80% of hospitals had shut down completely.

Cite this as: *BMJ* 2022;376:o37

COVID DEATHS

The UK has now recorded more than **175 000** covid related deaths since the start of the pandemic. The UK is the seventh country to pass this figure, after the US, Brazil, India, Russia, Mexico, and Peru *[ONS]*



SIXTY SECONDS ON . . . LOCKDOWN INJURIES

MORE PANDEMIC WOE?
I'm afraid so. Data from NHS Digital on the number of people in England admitted to hospital with injuries sustained in 2020-21 have been analysed by PA News Media. They found popular lockdown hobbies were associated with thousands of admissions.

CAN WE DRILL DOWN A BIT FURTHER?
Power tools produced one of the highest rates of injury, with more than 5600 people needing hospital treatment after their odd jobs turned into botched jobs.

ANY MESSAGES TO HAMMER HOME?
Hand tools such as saws, hammers, and chisels were safer than power tools but still led to around 2700 amateur handymen and women going to hospital.

ANYTHING ELSE MAKE THE CUT?
Lawnmowers were at the sharp end and proved to be a common source of injury, with 349 gardeners among those seen in hospital.

BITING OFF MORE THAN IS CHEWABLE?
That was the case with some pet owners. Owning a dog became popular in lockdown but with painful results for some. More than 7300 people were admitted to hospital after being bitten or struck by a dog. Other animals played a part, with 60 injuries involving a venomous spider and 47 involving rats. Four people fell foul of scorpions.

WHAT ELSE HAS BEEN COOKING?
Too much, apparently. All that lockdown baking turned sour for some. Almost 2250 people needed treatment after contact with hot drinks, food, and cooking oils.

DO PEOPLE NEED TO GET OUT MORE?
Up to a point. More than 5300 people injured themselves after falling from playground equipment. While their average age was 9 years, dozens of people over the age of 30 came to grief on swings and slides. These included eight people over the age of 90. Almost 1000 people needed treatment for injuries sustained while climbing trees.

IT'S NOT INSIGNIFICANT, THEN?
Far from it. The figures represent injuries that led to a hospital admission. Many more would have been treated by family doctors and emergency department staff.

Bryan Christie, Edinburgh

Cite this as: *BMJ* 2022;376:o32

Army called in as omicron fuels NHS staff crisis, with 41% rise in absences in a week

The government has sent 200 armed forces personnel into NHS hospitals across London to help ease staff shortages created by covid-19 absences.

The Ministry of Defence will provide 40 defence doctors and 160 general duty personnel, who are being held in readiness, to support hospitals for three weeks. The doctors will help with patient care, while the general duty personnel will work on tasks such as maintaining stocks, checking in patients on arrival, and conducting basic checks.

A defence ministry spokesman said the staff had been deployed to London in response to an NHS request, adding, "These personnel will be part of a group held in readiness by the MoD to help with UK resilience tasks. They haven't been pulled out of somewhere else to do this. They will have different areas of expertise."

The deployment came amid growing staff absences in recent weeks because of illness from covid or isolation. In the week ending 2 January an average of 80 294 NHS staff were absent each day (table).

They haven't been pulled out of somewhere else to do this

More than two fifths of these (35 596) were absent because of covid, a 41% rise from the previous week (25 273 in the week to 26 December). London had the

NHS TRUST STAFF ABSENCES FOR WEEK ENDING 2 JANUARY

	Total absences (daily average)	Covid absences (% of total)
East of England	6546	3096 (47.3)
London	10025	5119 (51.1)
Midlands	16602	6964 (41.9)
North East and Yorkshire	16670	7354 (44.1)
North West	15363	6426 (41.8)
South East	8256	3875 (46.9)
South West	6832	2762 (40.4)
England	80294	35596 (44.3)

Source: NHS England urgent and emergency care daily situation reports 2021-22

We have good treatments but questions remain, say doctors

Although the impact of omicron has largely been mitigated by vaccination, previous infection, and better treatments, general medical wards still face high numbers of patients, with many parts of the UK bracing themselves for the peak, say clinicians.

The most recent report from the Intensive Care National Audit and Research Centre, with data up to 7 January, showed that 629 patients had been admitted to critical care with covid in the previous fortnight. As a proportion of overall admissions, the figures for covid related critical care are the lowest since reporting began in April 2020.

On 10 January 18 655 patients were in hospital with covid-19, with daily admissions reaching 2332. Simon Ashworth, a consultant in intensive care medicine at Imperial College Healthcare Trust, told *The BMJ*, "Hospitals are very full, emergency departments are really busy, there are lots of admissions and difficulties in getting people into care homes."

Ashworth said the situation in intensive care wasn't comparable with last January but remained challenging. "We still have expansion beds open well beyond our normal capacity because we have a lot of other urgent and emergency patients too. A higher than normal proportion of patients are on ventilators, and beds to discharge patients into are hard to come by."

He remains cautious about what is ahead as every surge has not "been quite as expected."

Clearer picture on treatments

Large randomised controlled trials have provided clinicians with some guidance on treatments. "We are in a different place," said Lisa Spencer, a respiratory consultant and honorary secretary of the British Thoracic Society. "Patients get dexamethasone and tocilizumab if they meet certain criteria." Remdesivir was used quite a lot in earlier waves but much less so now, she added.

Respiratory support units have been set up in many large hospitals to provide a higher level of monitoring and respiratory intervention than would be expected in a routine ward environment. "Respiratory support units will be part of the reason why ICUs are not filling up. We know that giving CPAP [continuous positive airway pressure] is likely to stop the patient getting to intensive care," said Spencer.

Beverley Hunt, a consultant in thrombosis and haemostasis at Kings Healthcare Partners, an academic health science centre in London, said large studies had also removed the uncertainty around thromboprophylaxis. "We have had multiple international trials which all show that if you have moderate covid, by which I mean you need low flow oxygen, but you don't need mechanical ventilation or CPAP, you have a better clinical outcome with therapeutic low molecular weight heparin, but those with

From left: Anna Goodman, Beverley Hunt, Simon Ashworth, Thomas Jackson, Anthony Kerry, and Lisa Spenser

highest proportion of staff absences attributable to covid, at more than half.

Thirty two military co-responders are also being deployed to the South Central Ambulance Service, which covers Berkshire, Buckinghamshire, Hampshire, and Oxfordshire, to work alongside paramedics. They are expected to be in place until the end of March.

Almost 400 military paramedics are already helping ambulance trusts in Wales and Scotland, and more than 1000 military personnel are also supporting the vaccine booster programme across the UK.

Chaand Nagpaul, the BMA's chair of council, said that while he welcomed the military's support, the number of personnel was very small and would not fix staff shortages.

He added, "There is no doubt that London was hit hardest first, but omicron is now affecting all areas of the UK, with 24 hospital trusts across the country having declared critical incidents, underlining how serious the situation has become nationally."

Chris Hopson, chief executive of NHS Providers, said, "Colleagues outside London and across the country who are currently planning for further growth in omicron infection rates and hospital attendance will also be keeping a close eye on the potential for additional support. But the fact that we need to call on army medics and general duty personnel at all underlines the sheer scale of the workforce challenges the NHS is facing."

The military are no substitute for frontline clinicians who are in desperately short supply
Matthew Taylor

Matthew Taylor, chief executive of the NHS Confederation, said that "the military are no substitute for frontline clinicians who are in desperately short supply, so we need to be realistic about how much of a difference this will make in London."

He added, "The issues facing the NHS are complex and won't be addressed simply by bringing in extra bodies. Staff sickness and self-isolation levels, access to testing, and problems discharging patients due to lack of capacity in social care are all adding to the current pressures."

Gareth Iacobucci, *The BMJ*
Cite this as: *BMJ* 2022;376:o47

severe covid need to have standard doses of thromboprophylactic."

She added, "My impression so far is that we're not seeing such severe disease and therefore we're not seeing such high rates of thrombosis overall."

Monoclonal antibodies are a potential option for some patients. But while Ronapreve, the combination of casirivimab and imdevimab, has been available for some weeks, it was found to have lower efficacy against omicron.

The Recovery trial is preparing to add the neutralising monoclonal antibody sotrovimab and the antiviral molnupiravir to its platform of treatments. The team led by Anthony Kerry, consultant respiratory physician at Swindon's Great Western Hospital, recruited the 46 000th participant to Recovery at the end of 2021.

We're not seeing such severe disease and therefore not seeing such high rates of thrombosis
Beverley Hunt

"Apart from Ronapreve a lot of treatment protocols are the same for omicron, but the landscape is changing because more people are coming in with milder illness. We haven't got all the answers and therapies yet, and so we do need more research," Kerry said.

One big change in December was the introduction of covid medicine delivery units to offer either sotrovimab or molnupiravir to patients with mild disease in the community with the aim of preventing hospital admission.

Anna Goodman, a consultant in infectious disease and general medicine at Guy's and St Thomas' Trust, said more than 2000 patients had been referred to its unit since mid-December. "These are treatments for patients who have been vaccinated but are not able to respond so are vulnerable," she said. Eligible people include those who have recently had chemotherapy or who cannot generate antibodies because of a medical condition. "We look forward to understanding more about how people who have been vaccinated may perhaps benefit from these treatments," Goodman said.

Thomas Jackson, a visiting consultant in geriatric medicine at University Hospitals Birmingham Trust, who described hospitals as "just about coping," said a significant number of older patients with covid had always presented without the classic symptoms. "The feeling is that now with omicron there are more atypical presentations in general, and that's amplified in the older population," he said.

The difficulty in this population is that there are no clear guidelines on treatments, he added. "The way that dexamethasone and IL6 inhibitors are given is around respiratory failure and oxygen requirements. What we don't know is whether these treatments would be of any benefit [to people] with atypical symptoms."

Emma Wilkinson, Sheffield
Cite this as: *BMJ* 2022;376:o61

HOSPITAL TURNS STAFF CANTEEN INTO SURGE WARD

Staff at Royal Preston Hospital can no longer get hot meals from their staff canteen because it has been turned into a surge ward housing 50 beds for patients with covid-19.

Charters Restaurant, which usually opens for five hours on weekdays, closed on 4 January to be repurposed, along with a physiotherapy gym. A visitors' car park was closed before Christmas to allow a temporary Nightingale surge hub to be constructed. This will provide 100 beds for recovering patients from across the north west of England.

Lancashire Teaching Hospitals Trust, which runs the hospital, said the canteen closure would be temporary and that in the meantime staff had access to a restaurant in the education centre that serves hot food and to a café at the front entrance. Hot food was also available from vending machines, and a meeting room was being fitted with microwave ovens and converted into a sitting area. There is also a pizza ordering service, a snack trolley, and shops onsite. And community groups are also providing staff with donated food while the canteen is closed.

Ingrid Torjesen, *The BMJ*
Cite this as: *BMJ* 2022;376:o59

"Support overseas doctors stranded by cancelled exams"

The chair of the British Association of Physicians of Indian Origin (BAPIO) has called for overseas doctors affected by the cancellation of exams that would have allowed them to work in the NHS to be given financial and emotional support, after many were left facing significant hardship.

The GMC has cancelled exams in January and February for hundreds of doctors who qualified overseas because of the surge in covid-19 cases, saying it was the "only viable option" given the pressure on the NHS and reduced availability of examiners.

But BAPIO's chair, J S Bamrah, expressed disappointment that the GMC seemed not to have learnt from the "mistake" of cancellations during previous lockdowns. "We've had calls from lots of distressed people," he told *The BMJ*. "What we don't know is how many are in this country: some are here and some aren't. Some people have booked their flights and hadn't had a chance to cancel and won't be due a refund.

What we don't know is how many are in the UK: some are here and some aren't
J S Bamrah

"We should be better prepared. I asked for things to be put in place to support people financially and emotionally."

The GMC said it had asked candidates who were already in the UK or who had a job offer to contact it directly with details of their circumstances and their visa expiry date. "We intend to reopen on a limited basis in February so we can prioritise those candidates already in the UK or with a job offer or place in training," said Una Lane, the GMC's director of registration.

Around 2600 doctors were due to take their Professional and Linguistic Assessments Board (PLAB) tests, which ensure doctors have the right knowledge and skills to practise medicine in the UK. The GMC cancelled the tests on 22 December, saying that the omicron wave had limited its ability to run them. The tests require up to 54 doctors a day to act as examiners and many felt their clinical commitments had to take priority over tests, meaning it wasn't feasible to run the tests at the scale planned, the GMC said.

Matthew Limb, London

Cite this as: *BMJ* 2022;376:o36

JOEL GOODMAN/LNP/SHUTTERSTOCK

Trusts not declaring critical incidents hides depth of crisis

The number of official critical incidents declared by NHS hospital trusts is likely to massively underestimate the severity of the situation in acute care, a senior leader has told *The BMJ*.

Last week at least 24 of England's 137 trusts officially declared critical incidents, many of which were driven by staff absences because of covid-19. However, while declaring a critical incident is the formal mechanism for signalling that priority services may be under threat, other trusts have opted not to declare one, despite struggling with similar levels of patient demand and staff absences.

For example, hospitals in Greater Manchester suspended some non-urgent appointments and surgery because of workload pressures but didn't declare a critical incident.

No incentives

Nick Scriven, past president of the Society of Acute Medicine and a consultant in acute medicine at Calderdale and Huddersfield NHS Foundation Trust, told *The BMJ* that the actual number of hospitals facing

Shorten isolation periods to relieve NHS pressures, say leaders

Redeploying medical students and trainees is one of the steps needed right now to relieve pressure on the NHS as hospitals struggle to deal with staff absences, the organisation that represents trusts has said.

The NHS Confederation has also called for the self-isolation period for people with covid to be shortened to five days, in line with the US and France, if the evidence shows this poses no risk to patients. It said this would "significantly help to reduce the level of staff absence over the rest of the winter."

Staff absences

Some hospitals are reporting that around 10% of their staff are currently absent. This comes as nearly 1.3 million new covid cases were reported in the past week in the UK (31 December to 6 January), with omicron being the dominant variant.

Helen Buckingham (left), director of the Nuffield Trust, said NHS staff absences were equivalent to around one in 12 of those employed.

Matthew Taylor, NHS Confederation chief executive, added, "The government now needs to do all it can to mobilise more staff and other resources for the NHS to get through this extremely challenging period. We should not be in this position two years into the pandemic."

Deploying students

One suggestion to relieve some immediate pressure is to bring in medical students to provide extra support on the wards or administratively, as was done during the first wave in March 2020.

Kiran Patel, University Hospital Coventry and Warwickshire's chief medical officer, who helped organise medical student volunteers in the first wave, told *The BMJ* his trust was not yet using students in this way as education was still being delivered and it was crucial this was not interrupted. However, he has started asking students if they might want to volunteer for support work, to go alongside their normal studies.

critical pressures could be three times the official number. He said there was no incentive for hospitals to declare a critical incident because it brought no additional support but increased the scrutiny on them.

Scriven said, "I've heard it said on multiple occasions: 'We could declare a critical incident, but it doesn't get us anything, we'd get no practical help—it just brings us reams of paperwork and inspections.'"

Safe patient care

NHS England describes a critical incident as "principally an internal escalation response to increased system pressures/disruption to services that are or will have a detrimental impact on the organisation's ability to deliver safe patient care," requiring special measures and support to restore normal operating functions. But it doesn't specify what support is available.

NHS England also warns that declaring a critical incident will generate "significant media interest," which without effective communications management "can reduce effective management of the wider incident."

Trusts facing critical pressures are not obliged to declare critical incidents, NHS England said. When asked to define the benefits of declaring one, the only advantage a spokesperson provided was that trusts can use it to alert staff and encourage them to come into work.

On 9 January the *Independent* reported that NHS national and regional directors were putting pressure on trusts not to declare critical incidents and to maintain elective care despite soaring staff shortages.

A senior source at an NHS trust in the East of England told the *Independent*, "There are probably more trusts on the cusp of critical incident declaration than is being let on. Maybe there are a significant number now on the cusp, who have already pressed the button internally . . . and for whatever reason this has not been announced locally."

Ingrid Torjesen, *The BMJ*

Cite this as: *BMJ* 2022;376:o60

SOME HOSPITALS are reporting that around 10% of their staff are currently absent

Flexible infection control measures

Patel said another area to look at was infection prevention and control (IPC). "Our IPC measures need to be agile to make sure that they don't invoke pressure in the system. But, at the other end of the spectrum, they need to be safe enough to safeguard patients," he said. One possible change could be reducing the 14 day isolation period for inpatients who are known to have been exposed to a confirmed covid case while in hospital, he added.

The NHS Confederation said that added pressures were coming from hospitals struggling to discharge patients, often because of lack of capacity, staff absence in social care, and some patients choosing not to leave hospital until they have a social care provider of their choice.

To aid this, it is calling on the government to publish guidance enabling patients to be transferred to a suitable placement from where they can then choose a provider.

Advice to seek care

The NHS Confederation also wants the government to give the public "clear and consistent" advice on what they should do when they experience minor illness to "avoid GPs and emergency departments being overwhelmed."

There are concerns, however, that the NHS could see a repeat of earlier waves where people who needed healthcare did not come forward because of fears of infection and messages about protecting the NHS.

Patel said, "It's a time of anxiety, but we need to reassure patients and the population that we will deliver the urgent and acute care that they need. What we don't want is patients not coming to hospital when they need care."

Elisabeth Mahase, *The BMJ*

Cite this as: *BMJ* 2022;376:o38

Omicron is battering NHS, causing untold suffering, say doctors

The government must provide a "thorough plan," with funding to match, to tackle the NHS backlog, as nearly two thirds of doctors report the spread of omicron has caused a dramatic slowdown in provision of non-urgent care, the BMA has said.

Millions of patients were being left in "untold suffering," it warned. A survey of 5732 doctors found that 97% were concerned about the NHS's ability to deliver urgent and acute care to non-covid patients, while 98% were concerned about the NHS's ability to reduce delays and waiting lists.

The findings follow a damning report from MPs on the Health and Social Care Committee that said the staffing crisis must be tackled if the NHS were to reduce the care backlog.

BMA council chair Chaand Nagpaul said, "The prime minister is wrong to ask that the NHS 'just get through it'—this survey shows that omicron is battering our health service, forcing staff off sick, resulting in untold suffering for patients as a result.

"We have a record breaking waiting list stretching to almost six million. As doctors, it is our job to provide the care they need, and it's distressing when we can't do that, with the risk that many patients' health will deteriorate as they wait."

Nagpaul added, "The government must now act decisively to control the impact of omicron on our health service."

Elisabeth Mahase, *The BMJ* Cite this as: *BMJ* 2022;376:o45

The survey found that 46% of 5889 doctors said they could always access lateral flow tests when needed; 21% of 5910 reported having to self-isolate within the past two weeks, and 89% of 5933 said clinical colleagues had to take sick leave or self-isolate over the same period

When asked about potential measures to limit covid's spread, 77% of the doctors strongly supported mandatory face masks in crowded spaces and hospitality venues, temporary limits on large events (56%), and social distancing in public places, shops, and places of work (52%)

SANDRA CALLIGARO/MSF

THE BMJ APPEAL 2021-22

Help bring hope to Afghans

A baby is examined in the neonatal intensive care unit at Boost Hospital, Helmand, Afghanistan, a country where Unicef predicts an estimated 3.2 million children under the age of 5 years will suffer from acute malnutrition this year.

For decades Afghanistan's services have been supported by Médecins Sans Frontières, including hygiene promotion sessions at its Kahdestan clinic (inset). This year's *BMJ* appeal is supporting MSF's Afghan Crisis Appeal, which will fund its work in Afghanistan, as well as supporting its work in neighbouring countries.

The 2021-22 appeal is being supported by the Green Room Charitable Trust, which has made up to £50 000 available to match donations received before 31 January. This means that your support for MSF will go even further.

Tom Moberly, UK editor, *The BMJ*

Cite this as: *BMJ* 2022;376:o55

ANDREW QUILTY/MSF

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EDITORIAL

Is the NHS overwhelmed?

Millions of people are already feeling the effects of a health system under unbearable strain

Finding the right words to describe the pressures facing healthcare services in England right now is difficult. They are certainly not normal: at least 24 NHS trusts declared a "critical incident" in the first week of January,[1] which means they may not be able to provide urgent or safe services.[2] In November 2021, 10 000 patients waited over 12 hours in emergency departments after a decision to admit to hospital—five times more than in 2020 and nine times more than in 2019.[3] Since then, covid-19 cases have spiked,[4] and staff absences in hospital are up by around 40%.[5]

But is the NHS overwhelmed? The British Medical Association says so: "the facts, figures, and the living reality for thousands of patients and NHS staff daily demonstrate undoubtedly that the NHS is currently already overwhelmed."[6] But the prime minister is not so sure: "different places, at different moments, will feel at least temporarily overwhelmed," he said recently.[6] Just not enough—yet—to warrant further measures to control covid-19 cases.

Definition

There is no clear definition of an overwhelmed healthcare system. One version might be when a healthcare system cannot provide care to people who need it. Reports from Italy in March 2020 of patients lying in hospital corridors and shortages of ventilators offered a distressing example of what this looks like.[11] Many countries postponed planned services during the pandemic and some reduced emergency care.[12-14] In the NHS, covid-19 led to a massive disruption of care and a huge backlog of unmet need.

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NATHAN DENETTE/PA/ALAMY

One in four people are not confident in the NHS's ability to provide the care they need

Another version of "overwhelmed" might be when quality of care falls below an acceptable threshold. Staff shortages in the NHS stood at 100 000 before covid-19.[17] Now more than 80 000 hospital staff are also off sick or self-isolating—around half because of covid-19.[5] Patient safety is at risk.[18 19] The army has been called in to help London hospitals.[20] And people are being asked to find lifts to emergency departments because ambulances are taking so long to arrive.[21]

What measures can tell us when things have gone from bad to overwhelmed? In the NHS constitution, government sets out various performance standards for NHS care and rights for patients, such as the right to start non-urgent consultant-led treatment within 18 weeks from referral.[22] In October 2021, more than two million people had waited longer than 18 weeks for routine hospital treatment—and more than 300 000 people had waited more than a year.[3] But poor performance predated covid-19: the NHS has missed key national targets on cancer, planned, and emergency care for several years.[3] Has the NHS been overwhelmed this whole time?

Perhaps being overwhelmed is more of a feeling. After nearly two years of the pandemic, NHS staff are exhausted and almost half report illness from work related stress.[24] Recent public polling suggests that one in four people are not confident in the NHS's ability to provide the care they need.[27]

Missing the point

Looking for a single moment when the NHS goes up in smoke misses the point. Millions of patients and staff are already feeling the negative effects of a healthcare system struggling to cope with the unbearable demands placed on it.

Looking for a single definition also misses the point. Different healthcare systems have different starting points, values, and expectations—and these change over time. Going into the pandemic, the UK had fewer doctors and hospital beds per capita than most comparable countries. Germany had high levels of both.[13 29] Yet both countries have been high spenders on their health system response to covid-19 compared with other European countries.[13] These and other factors, like political leadership and public health measures,[30] have affected the ability of healthcare systems to cope with covid-19. Longstanding underfunding of social care in England has also had an effect.[31]

The prime minister has suggested England can "ride out" the latest wave of covid-19 infections without introducing further covid-19 measures.[6] He faces pressure from his own MPs to avoid more restrictions[32] and relied on Labour votes to introduce the relatively modest policy measures already in place. This is ultimately a political gamble—and government must be honest about the consequences for the NHS and the public it serves.

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EDITORIAL

Long term health implications of sexual violence

The association with poor physical health is often overlooked

England and Wales are experiencing an epidemic of violence against women and girls, according to a recent report by Her Majesty's Inspectorate of Constabulary and Fire and Rescue Services.[1] The report, commissioned by the home secretary after the murder of Sarah Everard, detailed the sobering extent of female homicide, sexual assault and harassment, intimate partner violence, stalking, and other forms of abuse that are too numerous to list here.[1] This is a worldwide concern.[2] One in three women worldwide report experiencing one or both of the two most common types of violence in their lifetime—violence committed by a male intimate partner (physical, sexual, psychological) and sexual violence by a non-partner.[2]

These statistics are shocking, but the critical implications of this epidemic for the long term physical health of women and girls are too often missed from the discussion. Long term physical health outcomes were omitted from the inspectorate's report,[1] a pattern we see across policy and clinical practice, showing a disconnect from research findings. The evidence is now clear that violence is a contributor to major non-communicable diseases and mortality in women[3]—women may survive the experience of violence, but the ongoing effects emerge later in the form of illnesses such as cardiovascular disease.[3]

To date, most research has focused on intimate partner violence, finding associations with mental health disorders but also diabetes, chronic pain, cardiovascular disease, and cervical cancer, among others.[3-7] Other forms of violence, such as sexual assault, are associated with an increased risk of multiple indicators of poor physical health, including carotid plaques, chronic sleep disorders, and indicators of brain small vessel disease.[8-10] Such health problems put women at risk of cardiovascular disease, stroke, and dementia, which are leading causes of death in women.[11 12]

JOSHUA WINDSOR / ALAMY

Violence is a contributor to major non-communicable diseases and mortality in women

Sexual harassment

Workplace sexual harassment is common.[13 14] Although traditionally it has not been regarded as sexual violence, workplace sexual harassment was associated with increased risk of physical health outcomes such as hypertension in a cross sectional study.[8] Given that hypertension is an important risk factor for multiple illnesses, including cardiovascular disease and stroke, this research highlights how all forms of violence against women, including verbal or psychological violence, warrant further investigation to uncover potential implications for women's health.[4] The extent of sexual harassment of young girls in schools and of both women and girls in online environments is only emerging,[15] and may be just the tip of an iceberg.

The report by the police and fire service inspectorate states: "The problem is known, consistent and deep rooted in its presence, and growing in the forms it takes."[1] However, women's disproportionate exposure to sexual violence is not widely recognised as a contributor to chronic diseases. For example, neither the British Heart Foundation website nor the American Heart Association guidelines specifically mention violence as a direct contributor to the development of cardiovascular disease among women.[16 17] Similarly, the UK NHS fails to highlight the link between violence and non-communicable diseases in women's clinical care.[18]

Acknowledging the prevalence of violence experienced by women and girls is an important first step. However, we must now seek to understand and address the implications of this epidemic for their long term physical health, with efforts needed across research, healthcare, and policy. Research studies should be longitudinal, collecting prospective data on experiences of violence and later life physical health outcomes to strengthen investigations of causality. Although some longitudinal studies have examined experiences of violence and its relation to long term physical health in women,[19 20] most research has been cross sectional.

Within healthcare, efforts should extend beyond the acute physical consequences of violence (such as injury and sexually transmitted infection) to consider longer term physical consequences that may arise only later in life. Screening women at risk of chronic diseases for experiences of violence, recording violence in routine clinical datasets, training healthcare professionals to consider these experiences as risk factors, and addressing the later life physical health consequences are all critical. Most importantly, however, we must prevent future violence against women and girls.

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Should e-cigarettes be licensed as medicines?

As the UK announces support for medicinal licensing of vapes, **Nicholas S Hopkinson** argues this will give doctors another means to help smokers quit. But **Jørgen Vestbo**, **Andrew Bush**, and **Jonathan Grigg** say the benefit is unproved and harms are likely

yes

A stricter medicinal licensing process is likely to reverse false beliefs that have been stoked by inaccurate and irresponsible reporting

Nicholas S Hopkinson, professor of respiratory medicine, Imperial College London
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A recent announcement by the Medicines and Healthcare products Regulatory Agency (MHRA) that it "seeks to encourage the licensing of electronic cigarettes and other inhaled nicotine-containing products as drugs and aims to support companies to submit marketing authorisation applications for these products," should be welcomed.

E-cigarettes are electronic nicotine delivery systems: users inhale vapour created by heating liquid containing a humectant (propylene glycol or vegetable glycerine), nicotine, and flavourings. Although no serious commentator describes e-cigarettes as "completely safe," the most toxic component of tobacco smoke—solid tar particulates—as well as carbon monoxide are absent from e-cigarette vapour. Users' exposure levels to other constituents are orders of magnitude lower than in people who smoke. For this reason, the UK government's independent Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment (COT) describes the relative risk of adverse health effects from vaping to be "substantially lower" than those from smoking.

"Substantially lower" risk

E-cigarettes are already widely available and are regulated as consumer products in accordance with the EU Tobacco Products Directive, which has been incorporated into UK law. Around 3.9 million people in the UK use e-cigarettes, two thirds of whom are now ex-smokers. Vaping by people who have never smoked remains rare, and in children and young people it is almost exclusively carried out among those who have been smokers or still are. Nevertheless, survey data show that nearly a third of smokers have never tried e-cigarettes, and around a third of smokers incorrectly believe them to be at least as harmful as conventional smoking.

At present, consumer regulated devices cannot be promoted as smoking cessation aids. By contrast, e-cigarettes that have been through the MHRA process and are regulated as drugs would be eligible for this therapeutic claim, in common with other licensed forms of nicotine replacement therapy. Medically licensed devices have the potential to be more effective than consumer devices because they can be made available in strengths greater than those permitted for consumer products (that is, containing more than 20 mg/ml nicotine). A Cochrane Collaboration systematic review already supports existing e-cigarettes as a smoking cessation aid, as does recently updated guidance from NICE.

Nicotine replacement therapy is substantially more effective in the context of behavioural support, which should also be the case when the nicotine replacement comes as an e-cigarette. The MHRA process should provide further reassurance to healthcare professionals that they can help their patients to quit smoking in this way, particularly in mental health settings where smoking rates remain high.

The introduction of e-cigarettes that have been through a stricter medicinal licensing process is likely to improve confidence among smokers who so far have been reluctant to try this approach, as well as reversing false beliefs about relative harm when compared with smoking—beliefs that have been stoked by inaccurate and irresponsible reporting.

One of many tools

It is important to emphasise that medically licensed e-cigarettes, as and when they become available, will be only one among many tools to support smoking cessation, including varenicline, bupropion, and combination nicotine replacement therapy, all ideally delivered in the context of psychological support for behaviour change. Their use in this context would also be likely to increase the rate of switching completely from smoking to vaping, as opposed to dual use, and it may also help users to set a goal of limiting long term vaping. People who vape are also advised to quit it eventually—but not at the risk of going back to smoking.

It is also important to ensure that debate around e-cigarettes does not distract from other necessary tasks to achieve the UK's ambition to be smoke free by 2030, such as introducing a "polluter pays" levy on tobacco industry profits and raising the age of sale from 18 to 21. To be sustainable, healthcare and other systems must reduce preventable future harm. There are still more than six million people who smoke in the UK: medicinal licensing of e-cigarettes could help many of them to live longer, healthier lives.

no

If the acute effects of vaping are worse than those of tobacco, how can anyone seriously state the unknown long term effects are less harmful?

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Andrew Bush, professor of paediatrics and paediatric respirology, Imperial College London

Jonathan Grigg, professor of paediatric respiratory and environmental medicine, Queen Mary University, London

There is already enough nicotine addiction. For decades, smoking rates in the UK have been declining, and few teenagers see themselves becoming smokers. This has been achieved without e-cigarettes, and the decline in smoking has not accelerated after the introduction of e-cigarettes.

If tomorrow all smokers quit and switched to e-cigarettes, we agree fewer people would likely have respiratory disease. However, continued smoking is not a proper comparator to vaping. We have an arsenal of evidence based tools, such as further rises in taxation and decreased availability, that can further reduce smoking prevalence with far less risk of known—and unknown—adverse effects.

No professional endorsement

No country in the world other than the UK has licensed e-cigarettes as drugs, and for good reasons. E-cigarettes as an aid to smoking cessation have not been endorsed by a single major respiratory or paediatric scientific society because their effectiveness is unproved—and remarkably poorly studied.

In the most cited trial comparing e-cigarettes with medicinal nicotine products, e-cigarettes were found to be superior, showing a one year abstinence rate of 18%, compared with 10%. However, twice as many people in the "old fashioned" replacement groups quit nicotine completely, as people using e-cigarettes tend to continue vaping, whereas most people using medicinal nicotine products quit.

There is also the phenomenon of "dual use": smokers quit by using e-cigarettes and then restart smoking while still vaping. In the most cited trial, 40% of people assigned to e-cigarettes were still using them after a year, and more than half of these were also smokers. (Bath University's Tobacco Tactics group has noted the tobacco industry loves dual use.)

E-cigarettes are not "95% less harmful than cigarettes." This often quoted statement is indefensible because vaping has been associated with many cases of acute lung damage, events not seen in smokers. Around 80% of these cases are related to cutting the liquids with cannabinoids—but 20% are not. If the acute effects of vaping are worse than those of tobacco, how can anyone seriously state that the unknown long term effects are less harmful and expect to be believed?

E-cigarettes are potent triggers of airway inflammation, which leads to adverse respiratory effects. They contain toxicities that overlap with those of tobacco, in addition to unique toxicities. We currently cannot quantify the associated harm and translate these effects into future numbers of sick patients, but this does not justify imposing harm.

In addition, widespread use of e-cigarettes carries a substantial societal risk of accepting addiction. This acceptance will undoubtedly be increased by licensing e-cigarettes for medicinal use. E-cigarettes, as well as other heated nicotine delivery products, are marketed using the same dark arts used for cigarettes. Once adolescents are vaping, they have a six times higher risk of becoming smokers. Many e-cigarettes are produced and marketed by companies in the tobacco industry, which has a history of lying to the public and spending fortunes on marketing, including to teenagers. We should protect children and adolescents from these cynical marketeers and let them be the first generation in a century not addicted to nicotine.

Unknown long term effects

Why would doctors want any part in giving approval to e-cigarettes? No other "treatment" would be accepted with the current level of evidence, and most doctors would be in breach of at least their own conscience by prescribing anything with likely but unknown long term adverse effects. To disguise e-cigarettes as a sensible harm reduction strategy will risk weakening sustainable smoking cessation strategies.

Instead, doctors should help to revive a decent NHS funded smoking cessation service, lobby politicians to increase taxes on products containing nicotine, and restrict smoking—as well as vaping—even more. Britain has a long tradition of leading the way in smoking prevention. Increasing these efforts while distancing itself from an industry that promotes addiction would again make the country a torchbearer—instead of showing off a foolish example of British exceptionalism.

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Covid, climate, drugs: Rachel Levine on the greatest challenges facing US health

The US assistant secretary for health and the first transgender person confirmed into post by the Senate, tells **Mun-Keat Looi** what this responsibility means to her, and what it's like taking on the role in this extraordinary time for the states

Rachel Levine's appointment to the senior ranks of US healthcare was global news in 2021 when the paediatrician became the first transgender person in the country's history to be confirmed into office by the US Senate and to be made a four star admiral in the US Public Health Service Commissioned Corps.

For Levine it was the culmination of a career that began at Harvard and was most recently based in Pennsylvania, the location of one of the country's worst opioid crises. She issued a state-wide standing order for the overdose reversal drug naloxone, allowing police officers to carry the drug and citizens to purchase it without a prescription. "As a young person, I found my passion in serving through medicine and in medical school and in my training," she tells *The BMJ*. "I have always found my career tremendously rewarding because, as a physician, all we try to do is help people."

This interview has been edited for length and clarity.

It's an extraordinary time to be in healthcare and politics. What are your thoughts on the US health situation at this time?

Covid-19 continues to be a challenge. We are doing everything we can to encourage people to get vaccinated. Boosters are now approved for everyone over 16 for the Pfizer and Moderna vaccines, six months past their second shot. For the Johnson & Johnson vaccine, which is the one that I received, it's two months after the shot was given. The news about the omicron variant should make it clearer than ever how important vaccinations are in the US and globally.

In November you came to the UK for COP26. What were your thoughts?

The health effects of climate change are so clear. In addition to the challenges of covid-19, in the US we have seen severe heat related illnesses, not only in the south west, where it is not uncommon, but even in the north west—Seattle and Portland. On-site temperatures were over 100°F with heat related illnesses and heat related deaths.

We have seen wildfires throughout the US and the world, and then seen smoke related illnesses associated with those wildfires. Hurricanes and tornadoes that are potentially associated with climate change have caused severe health effects throughout the US. So we have to—not just want to—tackle these effects of climate change. And clearly the time is now, and we want to do this as we do everything else, with a health equity lens.

Covid-19 has emphasised the depth and breadth of the health disparities that exist throughout the US, and we need to tackle these for the communities that have always felt the effects of many different health challenges more severely. So we created a new office at the US Department of Health and Human Services called our Office of Climate Change and Health Equity. There are three main areas of work. The first is to build the resistance of communities to the health effects of climate change. We're going to work with our regional offices to tailor those solutions to each region's unique needs. The second is to work with our health systems on recovery and resilience to the effects of climate change. And the third is to partner throughout the government with our private sector to help the nation's hospitals and health systems to reduce their greenhouse gas emissions throughout this decade and beyond.

What other health issues concern you?

I would like to highlight the mental health challenges that we are seeing in the US, particularly in young people, but really across the lifespan. One of the serious mental health challenges that we're facing is substance use and overdoses.

The rise in the number of drug overdose deaths that we are seeing is startling: the US Centers for Disease Control and Prevention's most recent data show that more than 100 000 people died from an

RACHEL LEVINE'S CV

Rachel Levine graduated from the Harvard College and Tulane University School of Medicine and completed her training in paediatrics and adolescent medicine at the Mount Sinai Medical Center in New York City. She was later appointed professor of paediatrics and psychiatry at the Penn State College of Medicine, vice chair for clinical affairs for the paediatrics department, and chief of the Division of Adolescent Medicine and Eating Disorders at the Penn State Hershey Medical Center.

In 2015, she was elected to be Pennsylvania's physician general and in 2018 named Pennsylvania's secretary of health.

In November 2020, President Joe Biden nominated her as the 17th assistant secretary for health for the US Department of Health and Human Services. She is the first transgender person confirmed by the US Senate, as well as the first transgender four star admiral in the US Public Health Service Commissioned Corps.

DANIEL SHANKEN/REUTERS/ALAMY

We are really challenged with social issues to get prevention and treatment medications to the public

overdose death in the 12 month period ending in April 2021—that's an increase of over 28% on the year before.

We have a new overdose prevention strategy at the Department of Health and Human Services with four pillars: prevention, harm reduction, treatment, and recovery. We want to be novel and innovative in all those aspects.

We think of harm reduction very broadly, and that includes the drug naloxone—a relatively inexpensive, safe, and effective reversal agent for overdoses caused by opioids. We want to do everything we can to increase the distribution and the administration of naloxone for our first responders, but also for the public to carry naloxone. I carry it in my purse to be able to offer that lifesaving treatment.

We also advocate fentanyl strips [small strips that can identify the presence of fentanyl in drugs]. We know that synthetic fentanyl compounds are one of the greatest risks for overdose deaths, and we want people to be able to detect the presence of fentanyl so they can either not use that substance or take the proper precautions.

We want to make sure that people have access to evidence based standard of care treatment, including for methamphetamine addiction or cocaine addiction. Finally, we want to make sure that people have access to recovery services. And to do this with that strong health equity lens.

You're a paediatrician and have worked in mental health for many years. How do you think the mental health of children and young people is now compared with what you saw earlier in your career?

We are seeing an increase in the mental health challenges of our children and adolescents, and this has been clearly exacerbated by the pandemic in terms of illness and potentially death of loved ones, in terms of isolation challenges with school, and the many different challenges that our youth face. I feel that attitudes [towards mental health] have changed for the better, but we have a lot of work to do.

Like Anthony Fauci, you were working directly with patients in the 1980s HIV/AIDS epidemic. What lessons from that time might we apply to the crises of today?

One is the stigma. There was obviously tremendous stigma associated with HIV over the past four decades. I think we have made progress on that, but we have more work to do. A second is how interconnected we all are and the importance of public health. Covid-19 has shown that.

The final lesson is the critical importance of the social determinants of health. We have made so much progress, medically, with HIV. We don't have a cure, but we have safe and effective and really pretty easily accessible treatments to treat people with HIV, so that it's a chronic illness [rather than a deadly one]. People can now have HIV that is undetectable and untransmissible, and we have PrEP, a medicine that can prevent HIV. These things would have seemed like miracles when I was a paediatric resident at Mount Sinai in New York City in the 80s.

Yet we are really challenged with social issues to get those prevention and treatment medications to the public. These include the social determinants of health, which cut across many, many different lines. Housing is a health issue. Transportation is a health issue. Economic opportunity is a health issue. Education is a health issue. Nutrition is a health issue. That's where I think we're most challenged.

What do you think that your status and position enable in terms of LGBTQ+ rights?

It is truly an extraordinary honour. It's also a profound responsibility. I appreciate the roles that I have for the impact that I can make in terms of policy and in terms of advocacy and for the historic nature of what they symbolise. But it's also clear that I stand on the shoulders of those who came before me and who have laboured for decades on these issues, both those known and those unknown. I hope that my appointment as a transgender person is the first of many more to come. We can continue to emphasise diversity, equity, and inclusion.

It's critical that we make progress for everyone. There are particularly vulnerable populations in our LGBTQ+ community, including our youth, our seniors, LGBTQ+ immigrants, and particularly LGBTQ+ people of colour. I would like to highlight the challenges of transgender people of colour, especially transgender women of colour who are not only at risk of discrimination or harassment but at risk of violence and murder.

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NEWS ANALYSIS

Who needs a fourth dose and why?

Gareth Iacobucci investigates how countries are using the evidence to guide covid vaccine decisions

Who is being given a fourth vaccine dose?
Most countries offering a fourth vaccine dose, including the UK and US, are prioritising people who are immunocompromised. This rationale is supported by evidence such as the UK based Octave (Observational Cohort Trial T Cells Antibodies and Vaccine Efficacy in SARS-CoV-2) study, which found that four in 10 people who were clinically vulnerable generated lower concentrations of antibodies than healthy recipients after two doses of a vaccine. The follow-up Octave Duo study, whose results have not yet been published, has been looking at the effect of three doses.

Michelle Willicombe, a consultant transplant nephrologist at Imperial College Healthcare NHS Trust, London, led the renal patient cohort in the Octave and Octave Duo studies. She told *The BMJ* that data from Imperial College researchers, alongside data from the US and France, indicate that around half of the patients who had no antibody response after two doses had some kind of response after three. This meant that around a quarter of immunosuppressed patients still had no responses after three doses.

"Some immunocompromised patients aren't making any response or inadequate responses compared with healthy controls after three doses, so they need four to even get anything detectable," Willicombe said. "Giving four doses to immunocompromised patients is a very different kettle of fish from the general population where you're just boosting the immune response."

What about the wider population?
On 3 January Israel became the first country to offer a fourth dose to all adults over 60 (above right), medical workers, and nursing home residents. Germany has also indicated it plans to administer a fourth dose to a wider section of its population to tackle the omicron variant.

Will other countries follow suit?
The UK's Joint Committee on Vaccination and Immunisation has said it is waiting for more data on waning immunity and effectiveness of vaccination in reducing hospital admission before it decides. Similarly, the US Centers for Disease Control and Prevention has not yet recommended a fourth dose for the wider public. "We're going to take one step at a time, get the data from the third boost, and make decisions based on scientific data," said the White House chief medical adviser, Anthony Fauci, on 29 December.

TOMER NEUBERG/JINI/XINHUA/ALAMY

The question is whether a fourth dose is necessary for people who aren't immunocompromised

What is the evidence for giving four doses?
Israel's prime minister, Naftali Bennett, said that preliminary findings from a study showed that antibody concentrations increased fivefold a week after a fourth dose, which "most likely" meant significantly increased protection against infection, hospital admission, and severe symptoms. These findings were based on a small unpublished Israeli study of 154 hospital employees who had received a fourth dose of Pfizer's vaccine.

No UK data are yet available. Willicombe and a team at Imperial College London are leading the recently launched Melody (Mass Evaluation of Lateral Flow Immunoassays in Detecting Antibodies to SARS-CoV-2) study, to investigate the proportion of immunosuppressed patients who have detectable antibodies after three and four doses and assessing whether a lack of an antibody response correlates with the subsequent risk of SARS-CoV-2 infection and severity of disease.

Willicombe said it wasn't surprising the Israeli data show that a fourth dose boosted antibodies in healthy people. But the question was whether a fourth dose was necessary for people who weren't immunocompromised. "If you give someone a boost, and they've got a normal immune system, they're going to get a boost in response," she said. "The question is, is it needed? The clinical efficacy data, not just infection rates but hospital admissions, deaths, etc, would guide that."

What can we learn from studies of three doses?
Data from the UK Health Security Agency on hospital admissions after omicron infection and vaccine effectiveness analysis show 72% protection after two doses for up to six months, rising to 88% within two weeks of a booster.

Peter Openshaw, an immunologist and professor of experimental medicine at Imperial College London, said the study added to the "now overwhelming evidence" that three doses provide good protection against severe disease caused by omicron. "It's a bit early to be sure, but it seems possible that some additional boosters will be needed," he commented. "Remember we need four doses of vaccine to be fully protected against whooping cough or polio. The same may be true of coronavirus, we need to wait and see."

Should we be preparing to give fourth doses to all?
The JCVI chair, Andrew Pollard, who led the team that developed the AstraZeneca vaccine, is cautious and has argued for an approach that targets preventing severe disease and protecting the world's health systems. "The future must be focusing on the vulnerable and [making] boosters or treatments available to them to protect them," he told the *Telegraph*. "We know people have strong antibodies for a few months after their third vaccination, but more data are needed to assess whether, when, and how often those who are vulnerable will need additional doses. We can't vaccinate the planet every four to six months. It's not sustainable or affordable."

What if four doses doesn't produce a response?
Willicombe said that immunocompromised patients who don't have a response even after four doses of vaccine may benefit from pre-exposure prophylaxis with antibody treatment. To identify the most vulnerable people, she argues that antibody testing should be brought in as part of the routine care of immunocompromised patients. "The only time we test for antibodies is when people are admitted to hospital [to see] whether or not they qualify for antibody therapy," she said. "But if we have availability of testing for antibodies, then why aren't we testing in people where we're chasing an antibody response?"

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