this week

RECOVERY TRIAL page 87 • CONTACT TRACING page 88 • ETHNIC MINORITIES page 90



Rising dialysis need sparks shortage fears

More than a quarter of patients with covid-19 on ventilators also need renal support in the form of dialysis, raising concerns that there could be significant supply problems as countries attempt to stock up on the required fluid and plastic consumables.

Nephrology consultant Graham Lipkin told *The BMJ*, "This is an under-recognised challenge. While the original focus has been on whether we have enough ventilators and intensive care beds, it has become apparent that there is a high incidence of acute kidney injury (AKI) requiring some form of renal replacement therapy (RRT) through dialysis. With the volume of people coming into intensive care, there are increasing challenges to capacity across the system."

Lipkin, who is president of the Renal Association, has been working with NHS England to develop new clinical guidelines for the prevention and optimal management of AKI in hospital. The guidance aims to reduce the incidence of AKI and therefore the demand for dialysis.

According to the latest Intensive Care National Audit and Research Centre report on covid-19, 28.8% of patients in critical care receiving advanced respiratory support required renal support.

Lipkin said covid-19 patients can develop AKI for several reasons. "When patients arrive at hospital, they are often dehydrated because of prolonged fever and because they have not been eating or drinking as normal," he said. "There does appear to be a direct viral invasion of the kidney, affecting the renal tubules and podocytes. Severe covid-19 is associated with a 'cytokine storm' and, during all this inflammation, the kidneys fall victim."

He said that early in the pandemic there was a "well founded direction to keep patients on the dry side to try to sustain lung function because patients were dying of viral pneumonia." It is now recognised, however, that this increases the risk of AKI and is unlikely to improve survival. As such, "keeping patients optimally hydrated reduces the risk of AKI without worsening chest function."

Patients in intensive care usually receive dialysis by continuous veno-venous haemofiltration, which requires a machine and plastic disposables together with the dialyser and filtrate replacement fluid. "Given the increased demand in the UK, across Europe, and particularly in the US, the disposables and the fluid are in short (Continued on page 88)

Covid-19 patients on ventilators may also need renal support as the virus can attack the kidneys as well as the lungs

LATEST ONLINE

- Covid-19: doctors are warned not to go public about PPE shortages
- Urgent GP referrals for suspected cancer associated with lower mortality, study claims
- Government appoints former Olympics chief to lead PPE production drive

the**bmj** | 25 April 2020 **85**

SEVEN DAYS IN

Cancer Research urges mass testing to enable care to continue during pandemic



Cancer Research UK has called for widespread covid-19 testing to ensure patients and staff can use the "covid-free" NHS centres and hospitals currently being developed.

The pandemic has led to thousands of people with cancer having their treatment

stopped or delayed, as services are reconfigured to deal with infections.

More than 3500 UK patients with newly diagnosed cancer are usually treated with surgery, chemotherapy, or radiotherapy each week, and more than 15000 should have started treatment in the past month, said the charity. But treatment rates have fallen by 50% in some parts of the country, and fewer patients have been urgently referred for suspected cancer.

The charity warned that these delays would leave the NHS unable to cope with the backlog once services reopen and that the plan for covid-free centres would be possible only with wide scale, frequent testing of NHS staff and patients. Sarah Woolnough, executive director of policy, said, "Cancer Research UK has helped to increase testing capacity through the Francis Crick Institute. We want to continue to contribute to the effort to beat covid-19, so that cancer patients can receive the care they need."

Elisabeth Mahase, The BMJ Cite this as: BMJ 2020;369:m1561

Covid-19

Training rotations are cancelled for three months

The UK's statutory education bodies confirmed that all planned rotations in May, June, and July have been cancelled because of the covid-19 pandemic. This will affect around 4000 doctors in training around the UK, who will now rotate at the next scheduled rotation point for their programme. A statement from the education bodies said, "We are continuing to work with partners to minimise the impact of any delayed attainment of capabilities due to the current circumstances and will ensure that these are taken into consideration in Annual Review of Competency Progression (ARCP) and recruitment and selection processes."

Man is jailed for hitting A&E doctor in the face

Gareth Rudge, 34, of no fixed address, was jailed for six months for punching an emergency department doctor who was dealing with covid-19 patients at the Royal Gwent Hospital. Sam Louros, the police officer in the case, said, "Assaults on emergency service workers should never be tolerated. Emergency service personnel

come to work to protect and help those in need, not to be assaulted." He added, "This sentence shows that incidents such as this are totally unacceptable, and there can be no excuse whatsoever for assaulting emergency workers."

Chinese authorities deny Wuhan cover-up

Local government officials in Wuhan (right), the Chinese city

of 11 million people where cases of covid-19 first appeared late last year, revised the virus's death toll upwards by 50% from 2579 to 3869. They said that the

revision was due to incorrect or delayed reporting—not because information had been concealed, as has been widely speculated.

Care home residents and staff are promised tests

The pledge to boost covid-19 testing for staff in care homes must be delivered promptly and be matched with greater transparency about the number of residents dying from the virus, healthcare leaders urged. The government announced on 15 April that it would expand testing in care homes to all

residents and staff with covid-19 symptoms. Currently, only the first five residents in a care home with symptoms are tested. The government also promised that all potential care home residents would now be tested before being discharged from hospital.

New vaccine taskforce will coordinate research

The business secretary, Alok Sharma, announced

the government
was setting up a
vaccine taskforce
to coordinate the
efforts of government,
academia, and
the industry in
accelerating the

development of a coronavirus vaccine. It will be led by the chief scientific adviser, Patrick Vallance (below), and the influenza expert and England's deputy chief medical officer Jonathan Van-Tam. Members will include AstraZeneca and the Wellcome Trust. It will support research

initiatives and, when a vaccine is available, it will boost manufacturing and assist in the regulatory process.

Mental health effects of pandemic need research

Research is urgently needed to help understand the mental health consequences of the pandemic, researchers argued in Lancet Psychiatry. The authors warned about major adverse effects, including increased social isolation and loneliness, "strongly associated with anxiety, depression, self-harm, and suicide attempts across the lifespan." To mitigate these problems they suggested better monitoring systems and rapidly rolling out evidence based online programmes and treatments.

South Korea investigates reconfirmed cases

WHO and the Korea Centres for Disease Control and Prevention are investigating how 91 people who were believed to have recovered from covid-19 tested negative but later tested positive. Sung-Il Cho, professor of epidemiology at Seoul National University Graduate School of Public Health, told *The BMJ* that re-detection could be caused by

the virus load dropping below detectable levels and then increasing, insufficient neutralising antibodies, reinfection, or a false positive result.





Vaccination

GPs urged to maintain immunisation services

The Joint Committee on Vaccination and Immunisation urged practices to maintain routine immunisation programmes during the pandemic. It advised practices to prioritise routine childhood vaccinations (to include targeted neonatal hepatitis B and BCG), pertussis vaccination in pregnancy, and pneumococcal vaccination for people in risk groups from ages 2-64 and all people aged 65 and over. Vaccinations should proceed if patients are well, are not displaying symptoms of covid-19 or other infections, and are not self-isolating.

Maternity care

Trust failed to act on risks raised by investigators

East Kent Hospitals NHS
Foundation Trust was
"inappropriately slow" to act

East Kent Hospitals University

NHS Foundation Trust



after a series of investigations into poor maternity care found the same safety risks reoccurring, a report into 24 incidents by the NHS Healthcare Safety Investigation Branch found. In December 2018, after looking into 10 serious incidents, investigators found four areas of risk: interpretation of cardiotocograph monitoring, recognition of deterioration, neonatal resuscitation, and escalation of concerns. But these risks were present in subsequent investigations.

Regulation

Obstetrician is allowed to work under supervision

Abdelkarim Mohamed, 68, a locum registrar in obstetrics and gynaecology who internally examined a patient so roughly

she reported him to the police, was allowed to return to work under supervision after 21 months' suspension. His review hearing found his fitness to practise still impaired but agreed with GMC lawyers that conditions were an appropriate sanction.

GP struck off for running medical report "factory"

A GP who ran a medical report writing "factory" and abused his position as an expert witness was struck off the UK medical register by the High Court. Asef Zafar was given a six month suspended sentence last April after he altered a medical report at the request of a solicitor and then lied about it. A medical practitioners tribunal suspended Zafar for 12 months last May, but the GMC and the Professional Standards Authority appealed to the High Court, which concluded that "no reasonable panel... could do anything other than direct erasure."

Ebola

New deaths in DRC postpone end of outbreak

The Democratic Republic of the Congo's Ebola outbreak returned after new cases appeared just hours before the country was due to pass a 42 day disease-free landmark. Officials are optimistic the virus will not surge again, partly because more than 300 000 people have been vaccinated.

Cite this as: BMJ 2020;369:m1569

PPE

More than a third (37%) of doctors who answered a survey said they were facing a shortage of FFP3 masks, 44% had shortages

Vaccinations

during the

the JCVI

should continue

pandemic, savs

of long sleeved gowns, and 46% had insufficient full face visors [BMA]



THE RECOVERY TRIAL

WHAT'S THIS?

The Randomised Evaluation of Covid-19
Therapy (aka Recovery) is one of the largest clinical trials set up in England. Led by
Oxford University and funded by the National Institute for Health Research, the hospital based study is testing the effectiveness of new or existing drugs for treating the virus.

SUCH AS?

The combination treatment for HIV lopinavirritonavir, the steroid dexamethasone, the malaria drug hydroxychloroquine, and the antibiotic azithromycin.

IS IT UP AND RUNNING ALREADY?

Yes. The study, approved on 11 March, had recruited a staggering 6000 patients by 20 April in 170 NHS hospitals around the UK.

IMPRESSIVE. HOW DID THEY DO IT?

The four UK chief medical officers wrote to all NHS trust leaders asking them to make "every effort" to enrol covid-19 patients in the trial. "The results are essential to the future treatment of UK and global patients," the CMOs said.

WHAT IS BEING MEASURED?

The main study outcomes are death in hospital, discharge, the need for ventilation, and the need for renal replacement therapy. It also aims to collect longer term information through review of medical records or linkage to medical databases such as NHS Digital's Secondary Uses Service.

WHAT IS THE TRIAL DESIGN?

All eligible patients are randomly allocated to several treatment arms, each of which is given alongside the usual standard of care. The trial is "adaptive," so new treatments can be tested as they become available. It

has been designed to have "the least possible impact on NHS staff," so patient enrolment and randomisation occur online, and all other procedures have been "greatly streamlined," the study protocol says, adding that informed consent is simple and data entry minimal.



The study is aiming to have data available to inform patient treatment by June 2020.

Gareth Iacobucci, *The BMJ*

Cite this as: BMJ 2020;369:m1573

the bmj | 25 April 2020 87

(Continued from page 85)

supply," Lipkin (below) said. "We started getting concerned about this around three weeks ago, when the true incidence of AKI started to become apparent.

"NHS England has worked with the renal community and put a high priority on resolving this, including setting up emergency renal operational delivery networks with leads working closely with critical care networks. NHS England is working with equipment manufacturers, but there is a significant risk of a mismatch between supply and demand, and that is a genuine concern."

He said UK renal units were supporting intensive care units with dialysis and innovative solutions wherever possible, but they still had to maintain normal service for 26 000 patients on haemodialysis.

Th

THERE IS A SIGNIFICANT RISK OF A SUPPLY AND DEMAND MISMATCH

The first NHS England guide states that

facilities should
"assess their
available capacity
and match
this to patients
according to need.
A conservative
approach to using
continuous RRT
may preserve
consumable
stocks."

The second guide brings together advice for those looking after covid-19 inpatients outside intensive care settings. It recommends that patients at increased risk of AKI have "serum creatinine, sodium, potassium, urea, and bicarbonate checked regularly, with results reviewed and acted on at least once every 48 hours, but in most cases daily." They should also have their fluid balance monitored.

For patients with AKI, clinicians should consider "withholding drugs that may worsen renal function." These include contrast media, non-steroidal anti-inflammatory drugs, angiotensin converting enzyme inhibitors, and angiotensin receptor blockers. The guide says that common drugs that may need dose adjustment or cessation in those with worsening renal function include opiates, gabapentin and pregabalin, metformin, antibiotics, anticoagulants, and digoxin.

Elisabeth Mahase, *The BMJ*Cite this as: *BMJ* 2020;369:m1588

UK pledges to reintroduce contact tracing to fight virus

he government is to reintroduce contact tracing of people who have had symptoms of covid-19, England's health secretary, Matt Hancock, said last week.

Hancock told MPs on the health select committee that the planned increase in testing capacity (the government has pledged to conduct 100 000 tests a day by the end of the month) would enable it to restart a policy it stopped in March when the UK prevalence of the virus began to rise. He said, "Community testing is part of the strategy, and we will be introducing it when we can. It wasn't possible when we had small numbers of tests, but as we have expanding numbers of tests it will be possible."

Hancock said a central team will implement the strategy, which includes an app for people to trace and report their own contacts, alongside traditional methods such as using health professionals to trace people. The central body will coordinate "teams from NHSX, who are leading on the app, with a huge array of partners working within that, [and] from Public Health England, who are the experts on external contact tracing."

If delivered, the ramping up of community testing would bring the UK back into

line with countries such as South Korea, Singapore, Hong Kong, and Germany, which have all deployed extensive testing and contact tracing and so far have experienced relatively low fatality rates. The World Health Organization has repeatedly emphasised the importance of contact tracing as a means for controlling the spread of the virus.

Privacy concerns

Approaches have varied. South Korea has successfully used a tracking app through smartphones to trace contacts, but there are concerns about privacy with this approach. Other areas have adopted more low tech strategies. For example, San Francisco has asked public health professionals to conduct voluntary phone interviews with covid-19 patients, and they then call anyone that the patient has been in contact with and ask them to quarantine themselves for 14 days.

There are also question marks over how effective digital technology is for contact tracing, with a rapid evidence review from an independent research institute published last week warning that there was currently no evidence to support the immediate national deployment of contact tracing apps in the NHS. It said, "The significant technical



Experts question new guidance to reuse PPE

Doctors have expressed concern over new guidance from Public Health England that recommends reusing personal protective equipment to mitigate shortages.

The guidance, which also recommends alternatives for unavailable equipment, has been seen as an admission of PPE shortages. Rob Harwood, chair of the BMA's Consultants Committee, said, "This guidance is a further admission of the dire situation that some doctors and healthcare workers continue to find themselves in because of government failings.

"Telling staff to use aprons in the place of gowns directly

contravenes both Public Health England's previous guidance and that of the World Health Organization. This is guidance that's there to help keep healthcare workers and their patients out of harm's way."

Neither damaged nor soiled

The new guidance states that fluid resistant surgical masks and disposable respirators (FFP3/FFP2/N95) can be reused if they are neither damaged nor soiled and if they are folded such that the outer surface is held inward and against itself and stored in a sealable bag. It also says that in the absence of fluid



88



We have to face the reality —we were too slow
Anthony Costello, UCL

limitations, and deep social risks, of digital contact tracing outweigh the value offered to the crisis response."

Traditional public health approach

Anthony Costello, head of the Institute for Global Health at University College London and a former WHO director, who gave evidence to the select committee, said the UK needed to adopt a traditional public health approach to tracing, and suggested that retired clinicians could help with contacting people by phone.

"Now we have a lockdown," Costello said, "the aim must be to make sure we have all the logistics set up—digital apps, public health teams, maybe volunteers and primary care—to have an absolute plan to protect the community as soon as we lift the lockdown, and then focus on the people we really want to lock down, which is cases and contacts."

Costello said he believed it was a mistake to abandon contact tracing in March across the whole of the UK, rather than just in areas such as London with a high prevalence of the virus.

He said, "As the WHO has said all along, you need to find cases, you need to test them

if you can, you trace their contacts, you isolate them, do social distancing, and most importantly you do it all at speed. We have to face the reality of that—we were too slow. But we can make sure in the second wave that we are not too slow."

But at the Downing Street press conference on 19 April England's deputy chief medical officer, Jenny Harries, defended the early approach and questioned the link between low death rates and comprehensive tracing. She said, "We had a containment phase and it was very successful. We had strict quarantine regimes from high risk areas. We followed up individual cases and families. But once you end up with seeding and cases across the community, our focus has to be on managing the clinical conditions of those individuals."

Costello criticised these comments on Twitter, writing, "I cannot believe what I am hearing. Jenny Harries still believes testing policy has been correct. And she doesn't understand links between tests and covid death rates. Is this CMO policy? If so, they should resign."

Gareth Iacobucci, The BMJ

Cite this as: BMJ 2020;369:m1591

resistant, disposable gowns or coveralls, reusable items such as washable laboratory coats or long sleeved patient gowns can be used.

Neil Mortensen, the Royal College of Surgeons of England president elect, said the college was deeply disturbed by the guidance changes, which he said were issued without consultation.

"After weeks of working with PHE and our sister medical royal colleges to get the PPE guidance right, this risks confusion and variation in practice," Mortensen said. "The new guidance implies that, even in the operating theatre, surgeons and their teams may not require proper PPE. This is unacceptable."

Laboratory coats or long sleeved patient gowns can be used

In a joint statement the Faculty of Intensive Care Medicine, the Intensive Care Society, the Association of Anaesthetists, and the Royal College of Anaesthetists said the guidance meant those who delivered care "may have to make difficult decisions that balance the health of patients with that of healthcare professionals."

They added they would support doctors who decided not to work because of inadequate PPE. They advised members that in such an event they comply with GMC

guidance by making "a clear contemporaneous record of your decisions."

A Department of Health spokesperson said, "We are working round the clock given the global shortage of gowns and other PPE to secure the NHS and the social care sector the equipment they need.

"New clinical advice has been issued to make sure that if there are shortages, frontline staff know what PPE to wear instead to minimise risk. This has been reviewed by the Health and Safety Executive and is in line with WHO guidance on PPE use in exceptional circumstances."

Abi Rimmer, *The BMJ*Cite this as: *BMJ* 2020;369:m1577

"Publish UK's self-isolation evidence"

Public health experts have called for the government to publish the evidence behind its guidance on self-isolation, which says people with symptoms of covid-19 need only isolate for a week.

Seven days is far shorter than recommended by WHO, which states people should only end self-isolation 14 days after their symptoms have resolved and following two negative tests.

In a letter to the health secretary, Matt Hancock, 25 experts warned that the current evidence suggests a "risk of infection beyond seven days from symptom onset. This has been reported to range from day 10 of symptoms to up to 24 days after symptom onset."

The signatories include Allyson Pollock, co-director of Newcastle University's Centre of Research Excellence in Regulatory Science, David Hunter, professor of epidemiology at Oxford University, and Maggie Rae,

Faculty of Public Health president.

The letter also raised concerns about the "narrow spectrum of symptoms the UK is using as an



indication for self-isolation." It pointed to several commonly reported symptoms including sore throat, fatigue, shortness of breath, and myalgia that other countries use as indicators.

The group has requested the evidence base informing the government strategy on self-isolation be made public.

The Department of Health did not respond to a request for a comment.

Elisabeth Mahase, *The BMJ*Cite this as: *BMJ* 2020;369:m1574

THE LETTER

signed by more than **LUU** scientists, also argued that people are "frustrated and confused about the scientific and logistical challenges of testing and what the government is doing about it"

the **bmj** | 25 April 2020

Impact on ethnic minority health staff to be explored

he government is to investigate why covid-19 seems to be having a disproportionate impact on healthcare workers from ethnic minority groups. Reports show that most doctors who have died from the virus are from ethnic minority backgrounds, although they make up only about a third of NHS doctors.

Chris Whitty, England's chief medical officer, said, "It's critical we find out which groups are most at risk so we can help protect them. Three things are clear: age, people who've got more than one other disease, and male sex. Being a member of an ethnic minority group is less clear. I've had discussions with scientists about this to try to tease this apart today."

He added, "We've asked Public Health England to look at this in some detail, and then, if we see any signal at all, we want to know what next to do about it to minimise risk."

Yvonne Doyle, PHE's medical director, said: "There is emerging



Every hospital must record the ethnicity of patients who are admitted and succumb to covid-19 immediately Chaand Nagpaul, BMA evidence to suggest that covid-19 may be having a disproportionate impact on ethnic minority groups. There is limited recording of ethnicity across almost all datasets, so we must be very careful in making assumptions. This is a really important issue, and detailed and careful work needs to be done before we draw any conclusions."

The BMA, which has flown its flag at half mast (above) to honour the NHS workers who have died, said the review needed to be informed by real time data if it was to have real effect.

Council chair Chaand Nagpaul said, "This must include daily updates on ethnicity, circumstance, and all protected characteristics of all patients in hospital, as well as levels of illness in the community, which is not currently recorded. The government must send a directive to every hospital telling them to record the ethnicity of patients who are admitted and succumb to covid-19 immediately."

Nagpaul added that ethnic minority communities in the workplace also needed protection. "This could include those at greatest risk, including older and retired doctors, not working in potentially infectious settings."

Amitava Banerjee, a consultant cardiologist and researcher, said there



could be several factors contributing to the deaths of ethnic minority doctors, including the possibility that ethnic minority groups were at higher risk of conditions, such as diabetes and cardiovascular disease, which could lead to more severe complications with a covid-19 infection.

Less able to speak up?

He also said that questions needed to be asked about whether the health professionals who died had less access to or were less able to speak up about a lack of access to personal protective equipment (PPE). "I would like to see a breakdown of which department or specialty they worked in. Are they particularly in risk-prone, procedure-driven specialties?" asked Banerjee.

"What I have seen so far is that they are from a mixture of specialties. But it's important to understand whether it is an issue of viral load, which could be because of where they work. But it could also be because they haven't been wearing the right equipment."

Data from the Intensive Care National Audit and Research Centre, published on 10 April, show that of 3883 patients with confirmed covid-19, 14% were Asian and 12% were black—almost double the UK's 14% ethnic minority population

Lockdown exit will be "very long," European officials warn

EU officials have unveiled a "roadmap" to phase out coronavirus containment measures. But they warned of a "very long" exit from a crisis that has devastated the continent's health and economic wellbeing.

The European
Commission's president,
Ursula von der Leyen,
warned that countries
failing to work together on
exit strategies could lead
to a dangerous second
wave of covid-19. "If shops
are open on one side of

the border, we don't want people moving from one member state to the next to shop," she said.

More than 80 000 people have died in Europe from covid-19, about two thirds of the global toll, but some EU states are already easing restrictions by allowing some schools and businesses to reopen. Von der Leyen said countries should use a "gradual, tailormade approach" to lifting lockdown.

"The way back to

normality will be very long," the roadmap says, warning that masks, gloves, tests, and tracker apps will be routine—and that full economic recovery will probably have to wait until a vaccine is found.

Von der Leyen also announced a "virtual pledging conference" on 4 May for governments, institutions, and private entities to raise money for vaccine research.

Michael Day, London
Cite this as: BMJ 2020;369:m1549

THE UK'S EXIT STRATEGY

On 17 April the business secretary, Alok Sharma, outlined the five tests to be passed before any relaxation of social distancing:

- 1 Ensure the NHS can provide sufficient critical care and specialist treatment across the UK
- 2 Be confident the UK was beyond the peak, with a sustained and consistent fall in daily covid-19 deaths
- 3 Have reliable data showing that the rate of infection is decreasing to manageable levels
- 4 Be confident that operational challenges, including testing capacity and PPE, are in hand, with supply able to meet future demand
- 5 Be confident that any relaxation will not risk a second peak of infections that overwhelms the NHS

90 25 April 2020 | the **bmj**

He added, "Regardless of seniority or skin colour, we shouldn't be seeing patients without the correct equipment. That should be nonnegotiable. The government should stop pussyfooting around and make sure concerns are heard and dealt with."

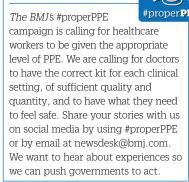
Peter Tun, an associate specialist in neurorehabilitation, died from covid-19 on 13 April. His son Michael tweeted, "My Dad Dr Peter Tun died from covid-19 because of the lack of PPE. My hope in writing this is that it will save more doctors' and nurses' lives and avoid pain for their families.

"The day he found out there was a positive for covid-19 in his ward, Dad told me that he had earlier complained to a manager because they took PPE away. He was told that if there was a case, they would bring it back. He replied it would be too late."

Abi Rimmer, The BMJ

Cite this as: BMJ 2020;369:m1562

#PROPERPPE



Concern at lack of clarity over change of ibuprofen advice for covid-19 symptoms

UK medicines agencies have changed their advice on ibuprofen to say the drug can be used to treat patients with symptoms of covid-19, although the evidence that prompted the revision has not been made public.

The change follows a review by the Commission on Human Medicines' expert working group, which concluded there was insufficient evidence to establish a link between use of ibuprofen, or other nonsteroidal anti-inflammatory drugs (NSAIDs), and contracting or worsening of covid-19.

The review has not been published, but it prompted the Medicines and Healthcare Products Regulatory Agency, NHS England, and NICE to update advice to say patients can take paracetamol or ibuprofen for symptoms such as fever and headache. On 3 April NICE recommended that paracetamol should be used in preference to NSAIDs until more evidence was available.

Paul Little, professor of primary care research at the

University of Southampton, expressed concern that neither the rationale nor the evidence base for the new advice has been published.

"The whole thing should be much more explicit to allow sensible discussion and proper critique," he told *The BMJ*. "I'm not cynical by nature but the thought there might be other agendas did occur to me. I suspect it is just that they are undervaluing the case control evidence."

Concerns timeline

Concern about NSAIDs has been growing for some time. Last May the European Medicines Agency began a review of ibuprofen and ketoprofen prompted by evidence from France that it could worsen varicella and some bacterial infections.

The covid-19 concerns were heightened by a tweet from France's health minister Oliver Veran in March warning that anti-inflammatory drugs could aggravate the infection and advising patients to take paracetamol instead. This

prompted panic buying of paracetamol, and pharmacies now struggle to obtain stock.

While the working group's conclusion on the lack of evidence was "clearly true," Little said, there was "equally no good evidence from the pandemic that it works for covid-19 symptoms."

He warned, "There is a danger of harm if more people take ibuprofen regularly for symptoms—which [the advice is] implicitly encouraging. I do hope I'm wrong."

Ingrid Torjesen, London
Cite this as: BMI 2020:369:m1555



The whole thing should be much more explicit to allow sensible discussion and proper critique Paul Little, Southampton University

Virologist June Almeida was the first to image the human coronavirus found by the Common Cold Unit

1965: first coronavirus debuts in The BMJ

The first description of human coronavirus—a family of viruses that now includes SARS-CoV-2, the cause of covid-19—was published in *The BMJ* in 1965.

The research, led by virologist David Tyrrell at the Common Cold Unit in Wiltshire, involved nasal washings from volunteers. The researchers found they could grow several viruses associated with the common cold, but not all. One such sample, referred to as B814, turned out to be what we now know as a coronavirus.

Using the original B814 nasal swab the team obtained more

secretions from volunteers after "inoculation of the original specimen." They wrote, "In over 20 experiments washings were tested by inoculation into a variety of test systems for known viruses. These should have revealed the presence of influenza A, B, or C, parsinfluenza 1, 2, 3, or 4, respiratory syncytial viruses, herpes simplex virus, and adenoviruses, cytopathic enteroviruses and rhinoviruses, or mycoplasma. None was found."

Further experiments confirmed that "after

considerable initial doubts we now believe the B814 strain is a virus virtually unrelated to any other known virus of the human respiratory tract."

In 1968 Nature ran a report from eight virologists, including Tyrrell and June Almeida, which said, "These viruses are members of a previously unrecognized group which they suggest should be called coronaviruses, to recall the characteristic appearance by which these viruses are identified in the electron microscope."

Elisabeth Mahase, *The BMJ*Cite this as: *BMJ* 2020;369:m1547

the bmj | 25 April 2020 91



25 April 2020 | the**bmj**



the **bmj** | 25 April 2020

EDITORIAL

Shameful neglect of social care in the pandemic

This is why we need a national health and social care service

ovid-19 outbreaks in care homes expose serious inadequacies in social care services across the UK. Data from across the world show that deaths from covid-19 mainly occur among older people, particularly those aged over 80.1

Close to 1.5 million vulnerable people are currently self-isolating indoors for 12 weeks.4 These include many older people and people with disabilities and chronic illnesses. Many residents in care homes are trapped in their rooms, with no visits from relatives and minimal interactions with staff. The decision to exclude relatives means that care homes have become closed institutions, increasing the risk that people are inappropriately denied hospital admission as well as the risk of neglect and abuse. 56 Of equal concern are plans to transfer patients recovering from covid-19 from the NHS into empty nursing home beds.7

Privatised, fragmented

Social services in the UK are among the most privatised and fragmented in the Western world. They have been underfunded for decades. Between 2010-11 and 2017-18 local authority spending on social care in England fell by 49% in real terms, ⁸ while privatisation increased. ⁸

Nearly a quarter of people working in adult social care are on zero hours contracts. They do not receive sick pay and often go to work when sick. The sector is 120 000 workers short, ¹³ and agency staff moving from one home to another further increases the risk of covid-19 transmission. Social care has been a low priority for personal protective equipment despite the high risks for residents and staff. ¹⁴

Emergency legislation in the UK has severely curtailed the legal rights to

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Radical action is required to bring all services and staff back under government control

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social care services of elderly, ill, and disabled people in the community and in residential settings. ¹⁵ In place of the duty to meet all essential social care needs, the Coronavirus Act 2020 substitutes a minimal obligation not to cut support below the level required to maintain their most basic human rights.

The Disability Law Service, a charity providing free legal services to disabled people, has condemned this action, concluding that it was contrary to international law—constituting "regressive" social care legislation targeting those least able to cope—and made no strategic sense.

Lack of access to essential social care along with loss of routine NHS services will simply lead to more health crises, more hospital admissions, and more essential workers, including NHS staff, having to take time off work to care for family members.

The government has had to use emergency powers to overcome the fragmentation of health services caused by the Health and Social Care Act 2012 in England. That there are no equivalent emergency powers in social care legislation is a testimony to the state's abandonment of responsibility for this vital sector.

The extra workforce capacity available to health services through flexible redeployment of staff is simply unavailable in the social care sector despite government advice that "Care home providers are advised to work with local authorities to establish plans for mutual aid, including sharing of the workforce between providers, with local primary and community health services providers, and with deployment of volunteers where that is safe to do so."

The current emergency has exposed once again the need for

a universal integrated health and social care service: radical action is required to bring all services and staff back under government control in a national and publicly accountable system so that high quality care is delivered by a trained and properly equipped workforce with decent terms and conditions of service.

A national health and social care system would (among many things) mandate the collection of vital data quantifying the effect of covid-19 on the social care sector—data on the number of cases and deaths by age, gender, ethnicity, and care setting, stratified by local authority area, ward, and general practice. An integrated system would allow detailed monitoring of staffing levels, sickness levels, the use of agency staff, and hospital admission rates for staff, residents, and other vulnerable groups. Accurate, timely data are key to controlling this pandemic.

No plan, no action

What is needed—and what is so obviously lacking—is a plan of action. A plan to relocate care home residents temporarily to safe, infection-free accommodation allowing visitors; to provide covid-only facilities with extra staff support for those who do not need hospital admission; to ensure adequate levels of trained staff in all facilities, with adequate protective equipment; and to implement comprehensive contact tracing and testing of suspected cases in staff and residents.

Above all we need a plan to transform our shameful social care system: a system that fails those in need, fails carers (paid and unpaid), and shames the UK.

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94 25 April 2020 | the **bmj**

EDITORIAL

Chloroquine and hydroxychloroquine in covid-19

Use of these drugs is premature and potentially harmful

e should be cautious about proposed treatments for people infected with SARS-CoV-2, the virus that causes covid-19. Many proposals are based on in vitro investigations, studies in experimental animals, or experience with interventions in infections with other viruses, whether similar to SARS-CoV-2 (eg, SARS-CoV-1) or not (HIV).

This is all true of chloroquine and hydroxychloroquine, both 4-aminoquinolines, which have been suggested as potential treatments for covid-19. Currently, at least 80 trials of chloroquine, hydroxychloroquine, or both, sometimes in combination with other drugs, are registered worldwide.

The possible activity of 4-aminoquinolines in infectious mononucleosis was first proposed in 1960, before its viral cause was known.3 Since then, many studies have shown that 4-aminoquinolines are active in vitro against a range of viruses. Their efficacy has been attributed to different mechanisms. For example, they are weak bases and increase endosomal pH in host intracellular organelles, inhibiting autophagosome-lysosome fusion and inactivating enzymes that viruses require for replication. They may also affect glycosylation of angiotensin converting enzyme-2, the receptor that SARS-CoV-2 uses to enter cells.6

Lost in translation

In cell cultures and animal studies, the effects of 4-aminoquinolines on viruses from avian influenza virus (H5N1)⁷ to Zika⁸ have been variable.

The translation from laboratory to clinic has also led to disappointments. For example, chloroquine inhibited dengue virus in some cell cultures¹⁴ but failed to shorten the illness in a randomised study of 37 patients.¹⁵



Wide use of hydroxychloroquine will expose some patients to rare but potentially fatal harms And although laboratory studies suggested activity against influenza virus, chloroquine did not prevent infection in a large randomised trial. ¹⁶ The disparity between laboratory and clinical experiments may be partly due to the complex pharmacokinetics of 4-aminoquinolines, ¹⁷ making it difficult to extrapolate from concentrations in culture media to doses in humans. ¹⁸

SARS-CoV-2

Hydroxychloroquine and chloroquine inhibit SARS-CoV-2 in vitro, and a Chinese commentary, mentioning 15 trials, reported that, "Thus far, results from more than 100 patients have demonstrated that chloroquine phosphate is superior to the control treatment in inhibiting the exacerbation of pneumonia," without giving any further details.

A preliminary account of one of those trials, a placebo controlled randomised study of two different doses of hydroxychloroquine in 62 patients with radiological findings of pneumonia but without severe hypoxia, reported small improvements in body temperature and cough in the higher dose treatment group. However, the endpoints specified in the published protocol differed from those reported, the results in the low dose group were

not described, and the trial seems to have been stopped prematurely.²¹

An open, non-randomised study of hydroxychloroquine, published in preprint, reportedly supported efficacy in 20 patients, but the trial design was poor and the results unreliable: six patients dropped out of the treatment arm (two because of admission to an intensive care unit and one because he died); the measure of efficacy was viral load, not a clinical endpoint; and assessments were made on day 6 after starting treatment.²²

Advocates, including Donald Trump, have argued that hydroxychloroquine is widely used and safe. Its use is now permitted by the US Food and Drug Administration²³ and advocated by the Indian Council for Medical Research.²⁴ But no drug is guaranteed to be safe, and wide use of hydroxychloroquine will expose some patients to rare but potentially fatal harms, including serious cutaneous adverse reactions, 25 fulminant hepatic failure, 26 and ventricular arrhythmias (especially when prescribed with azithromycin)²⁷; overdose is hazardous and difficult to treat.28

We sorely need an effective treatment for covid-19, but prevention by a vaccine or treatment with drugs that target specific structures in the virus are more likely to succeed than old drugs that may work in the laboratory but lack data supporting clinical use. No intervention should be assumed to be efficacious. Too many medicines have been withdrawn because of adverse reactions after showing clinical promise.²⁹ We need better, properly powered, randomised controlled trials of chloroquine or hydroxychloroquine. For now, except for supportive measures, infection with SARS-CoV-2 is "essentially untreatable."

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the **bmj** | 25 April 2020 **95**

DATA BRIEFING

Tackling covid-19: are the costs worth the benefits?

Too much uncertainty remains for evidence based decisions, says **John Appleby**

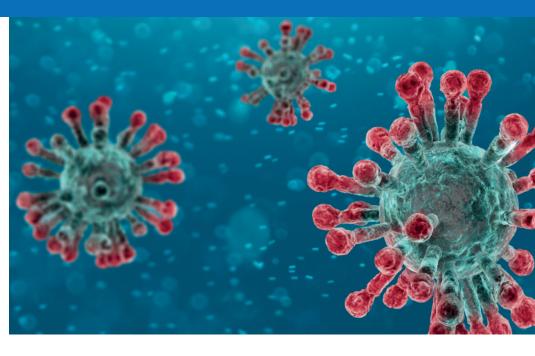
t is hard to write about the economics of covid-19 while we are grappling with such an unprecedented global emergency. But questions are being voiced—from presidents and commentators to health economicss¹⁻³ and the German Council of Economic Experts⁴—about the cost effectiveness of the measures being used to tackle the disease. In short: are the costs worth the benefits?

This may seem an outrageous question. Surely, we must do all we can to minimise mortality and morbidity from covid-19? But the cost-benefit question is one that all health systems face every day—is drug X better than drug Y (or doing nothing)? Should stroke services be centralised? How long should treatment continue for a particular patient? Or more specifically, which patients with covid-19 should be prioritised for ventilation?⁵

Wicked choices

Although there is no simple fix to many of these wicked choices, NICE was set up in an attempt to make what were previously somewhat opaque decisions more transparent and more consistent. The weighing up of costs and effects to be judged against a threshold value of the effects (benefits) is at the heart of NICE's decision making.

As UCL academics Shepley Orr and Jonathan Wolff point out, cost effectiveness may be characterised



There are, and will be, undoubted benefits from the interventions the UK has been pursuing as a somewhat heartless utilitarian approach, but it actually has a concern for fairness in the use of scarce resources⁶; a concern with the opportunity cost or lost benefits (economic and health) of a decision to do X for the benefit of one group of people instead of Y for another group.

But, as Orr and Wolff also note, it can be hard to reconcile the outcome of a cost effectiveness analysis that suggests an intervention is not worth doing when it comes to certain situations, such as rescuing people in emergency circumstances. So does cost effectiveness even have a role when it comes to covid-19—undeniably an emergency?

There is still considerable uncertainty about the impact of the pandemic. Up to 19 April reported cases of covid-19 in the UK totalled 120 067, and the number of deaths in hospital was 16 060 (figs 1 and 2). A proportion of those who have so far died with covid-19 would have died this year from other causes.

Modelled estimates of the number of lives that could be lost in a "do nothing" situation suggested that there could be up to half a million deaths attributable to covid-19 over two years. To put this in context, the total number of deaths in the UK in 2018 was 616 000. These estimates also suggested that with a combination of non-pharmaceutical interventions—school closure, self-isolation, complete lockdown, social

distancing, and banning of public events—plus treatment, deaths from covid-19 could be reduced to 250 000.⁷ Naturally, such figures represent best estimates so far and will change as the pandemic evolves.

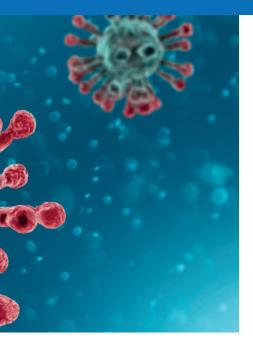
More recent modelling suggests that by 31 March the interventions in place in the UK (introduced from 12 March to 24 March) had saved around 370 lives compared with a model of no interventions (which estimated total deaths of 1800; fig 3). For Italy, further along the course of the pandemic, it is estimated that by the end of March around 38 000 lives had been saved (out of a counterfactual of 52000) by the interventions put in place around 10 March. There are, and will be, therefore, undoubted benefits from the interventions the UK has been pursuing to mitigate the impact of covid-19-to "flatten the curve."

Opportunity costs

At this point the ugly question that could be asked is whether the value of the benefits (deaths averted or quality of life years (QALYs) saved, say) is more or less than the (opportunity) costs of the interventions. The costs will be measured in economic as well as health and healthcare terms.

Opportunity costs will also include mortality and morbidity from conditions other than covid-19 because of reduced use of health services and delays in treatment of

96 25 April 2020 | the **bmj**



Daily Cumulative

BO DAILY Cum

Fig 1 | Confirmed cases of covid-19 in the UK up to 19 April 2020^{13}

other illnesses arising from the NHS prioritising resources on covid-19. Some indication of these from the Office for National Statistics' regular monitoring suggests that for the week ending 3 April for England and Wales, there were 3475 deaths from covid-19 but 6082 more deaths from all causes compared with the five year average for this week. ¹⁰ It remains to be seen how many of the "excess" non-covid deaths could be the result of covid-19 interventions and changes in the public's healthcare seeking behaviour.

Despite some early estimates from the US suggesting that there is a net benefit of social distancing and isolation versus the hit on the economy, 1112 these estimates come with large uncertainty.

Of course, the cost-benefit balance could change depending on the success of all the interventions being tried, including possibly millions of extra tests, increased personal protective equipment, ventilators, etc—and, not least, the discovery of an effective vaccine. But for now, the nature of the covid-19 pandemic suggests we shouldn't base any decisions about doing something versus doing nothing on the results of inevitably imperfect and premature analysis of the costs and benefits.

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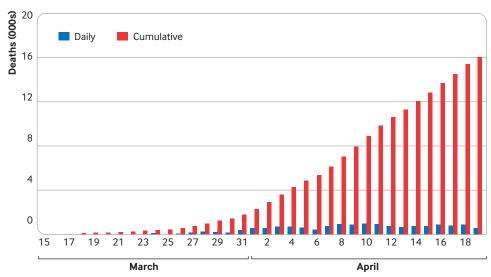


Fig 2 | Deaths from covid-19 recorded in UK hospitals up to 19 April 2020

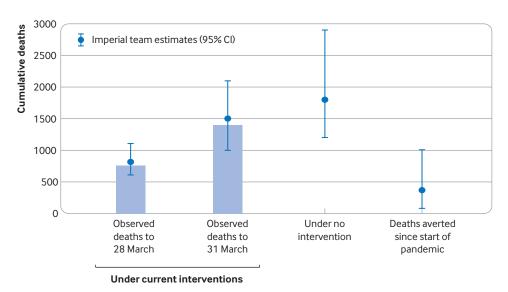


Fig 3 | Estimates of UK deaths from covid-19 with and without non-pharmaceutical interventions using Imperial College modelling 913

the**bmj** | 25 April 2020 **97**

yes

Such discrimination publicly expresses the view that older people are of lesser worth or importance than young people

Dave Archard, emeritus professor, Queen's University, Belfast d.archard@qub.ac.uk

Prioritisation—that is, deciding who should and should not receive potentially life saving treatment—is inevitable once demand exceeds the supply of resources. Various guidelines for making such decisions have been made public, in the UK and elsewhere, and from official organisations, advisory bodies, and academics.

The guidelines are informed by various moral principles, all of which have been subject to reasoned criticism. It is easy then to see why age might be proposed as a simple, clear, and definitive basis on which to decide matters: when there are no other relevant differences between two patients in equal need of care, choose the younger.

The obvious problem with using age is that it may just serve as a marker of relevant differences, such as clinical frailty and the likelihood of survival, or of the prospect of fewer years of life after treatment. However, if age is being used in this way, this should be recognised. As should the crudeness and unreliability of doing so.

If it is not a marker of something else then it is hard to see why age should be used as the determinative criterion. It becomes exposed as wrongly discriminatory because it licenses differential treatment based on "unwarranted animus or prejudice" against old people.

Where is the line?

There are three reasons why age should not be used. The first is that a simple "younger than" criterion is clearly unsatisfactory. It cannot be that an 18 year old is preferred to a 19 year old on the grounds of one year's difference in age. This would be not much better morally than tossing a coin or a crude "first come, first served" principle using the time of arrival at a hospital to determine whether care is given.

If young people as a demographic group are to be preferred to old people then there are problems of distinguishing in a non-arbitrary way between two patients who differ only in being just above and just below the agreed threshold of age. Equally it may be hard to justify generalisations across a whole group.

Second, there is the fair innings argument. This holds that everyone should have an opportunity to lead a life of a certain duration. Resources should then be distributed (and care given selectively) to ensure that those who have yet to live that length of life are prioritised over those who have already managed to do so. It has an intuitive appeal: why shouldn't those who have not had an opportunity to lead a life of decent duration be preferred to those who have already done so? Lucretius in his De Rerum Natura offered the compelling metaphor of diners overstaying their time at the table and properly being asked to give way, having had their chance to eat their fill, to those yet to eat.

Fair innings?

Nevertheless, there is no agreement on what counts as a fair innings. Even if we can agree, it is not clear why we should speak of fairness in this context. Luck and circumstances have a big role in how long we live, and it is not clear that we can speak of the length of a life as a good that can, and should be, distributed. The need for care, irrespective of age, might arise from bad luck. But it might also arise from choices, the consequences of which an individual should rightly be held responsible for. Some people to use Lucretius's dining metaphor—deserve to carry on eating; others do not. It is hard not to think that it matters what kind of life has been led and might still be led. Someone who has had her fair innings may yet have much to give the world that another who has not may be unable to offer.

Finally, to discriminate between patients in the provision of care on the grounds of age is to send a message about the value of old people. Such discrimination publicly expresses the view that older people are of lesser worth or importance than young people. It stigmatises them as second class citizens. We already discriminate against old people in so many ways, and they are socially disadvantaged in numerous respects (social care and employment, for instance). It would be an egregious moral error to compound such injustice. And it would be hard not to think-even if it was not intended—that a cull of elderly people was what was being aimed at.

HEAD TO HEAD Is it wrong to prioritise younger patients with covid-19?

98 25 April 2020 | the**bmj**

With services overburdened, healthcare professionals are having to decide who should receive treatment. **Dave Archard** says this is no excuse for wandering blindly into discrimination, but **Arthur Caplan** argues age is a valid criterion when supported by data



no

The powerful principle of affording equality of opportunity to enjoy a life makes age an important factor in making terrible decisions

Arthur Caplan, William F and Virginia Connolly Mitty professor of bioethics, Division of Bioethics, NYU Grossman School of Medicine, New York arthur.caplan@nyulangone.org

As protective gear, ventilators, beds, and staff remain scarce in many healthcare settings during the covid-19 pandemic, much attention has focused on what principles ought to be followed in allocating these resources. The question of what role age ought to play has set off both concern and contentious debate.

This is not inappropriate. People who are elderly, disabled, poor, or from ethnic minorities have faced much discrimination within and outside healthcare systems all over the world. No one ought to fear that morally irrelevant properties would be invoked to determine whether they are denied the opportunity to receive potentially life saving care.

Established criterion

The key ethical question is whether age by itself is ever a morally relevant factor in deciding who gets care when rationing is unavoidable. Many reports have indicated that in some countries, including Italy, age over 65 years was invoked as an exclusionary criterion for accessing scarce intensive care services. However, this is hardly the only instance of age being used to distribute scarce resources.

Access to renal dialysis has been restricted to those under 65 in some parts of the UK, while in Europe, Canada, Israel, and the US it is almost unheard of for anyone over 80 to receive a solid organ transplant from a dead donor. Age has played a role for many decades in limiting access to care when rationing life saving treatments.

That said, even in conditions of extreme scarcity it would be discriminatory to simply invoke age to exclude those in need. Blanket exclusion based simply on age with no additional rationale or justification is wrong. Many American rationing policies formulated in response to the pandemic begin, reasonably, with an explicit warning against blanket discrimination based on age, disability, race, gender, gender orientation, or religion.

But there are many instances of rationing where age alone is used to permit access, including "women and children first" in access to lifeboats during shipping disasters and in many policies regarding rationing of resources

in a pandemic where children are accorded first access. Giving priority to the very young seems to evoke broad consensus.

So what makes age in itself morally relevant? There are two main principles.

The first is the notion of fair innings—that each person ought to enjoy an opportunity to live a life. This commitment to equality of opportunity has nothing to do with the relative contributions of old people versus young people. Rather, the principle of fair opportunity to live a life is rooted in the idea that a very old person has had a life, middle aged people have had the chance at part of a life, and babies and young children deserve to have such a chance.

While there is no hard and fast rule for what is an "unfulfilled" life age for a person, most policies distributing life saving resources look to those under 18 as gaining priority while those in their 80s and beyond, who have had a chance to experience life and flourish as human beings, receive lower priority.

The other reason for using age is if the overarching principle for rationing is to maximise the number of lives saved. Most rationing policies do posit this as a fundamental principle.

Saving the most lives

If the goal is to save the most lives with scarce resources then age may matter if there is a diminishing chance of survival with increased age. And for ventilators and renal dialysis that is precisely what the data show. Lung and kidney function decline with age, and especially among the oldest people. So does overall response to ventilators and dialysis machines. Older age is often associated with an increase in chronic morbidity, which may also compromise the efficacy of scarce acute care resources, and there is evidence that older age can compromise the response a patient is capable of making.

To the extent to which data support the risk of failure or the odds of success, age can justifiably be used to ration care if maximisation of lives saved is the overarching goal. Indeed, the relevance of old age as a predictive factor of efficacy—combined with the powerful principle of healthcare affording equality of opportunity to enjoy a life—makes age an important factor in making the terrible choice of who will receive scarce resources in a pandemic. Ageism has no place in rationing, but age may.

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the **bmj** | 25 April 2020



COVID-19

How clinicians are leading service reconfiguration

It's not just the Nightingale hospitals— from rewritten rotas to IT ingenuity, clinically led reorganisation is transforming how trusts are working, finds **Jacqui Thornton**

s the NHS
Nightingale
hospitals attract
widespread
publicity, clinically
led innovation is quietly—and
quickly—transforming practice in
acute trusts to cope with covid-19.

Across the UK, the pace of change has been "breathtaking," says Keith Girling, medical director at Nottingham University Hospitals NHS Trust. It's not just the huge increase in intensive care capacity, there is also the reconfiguration of wards and redeployment of staff.

Medical teams are working in completely different ways; rotas have been rewritten wholesale; and areas of trusts that are quieter, such as clinical genetics and genitourinary medicine, are lending trainees and equipment.

IT proposals that before the outbreak were expected to take months have been accelerated and have come to fruition in days, and new clinical pathways have developed at record speed.

West Hertfordshire: breaking down barriers

Andrew Barlow, respiratory consultant and divisional director for medicine at West Hertfordshire Hospitals NHS Trust, says, "I've been blown away by the innovation both in terms of working together and doing rotas in a different way

I've been blown away by the innovation. The respiratory and intensive care departments have never been closer

Andrew Barlow, West Hertfordshire Hospitals (above)

and of breaking down barriers between specialties. I don't think the respiratory and [intensive care] departments have ever been closer—we sense check with them and vice versa."

In one clinical innovation at West Hertfordshire, the way the radiology department works has been transformed, with IT support enabling its consultants to report virtually from home overnight.

The trust is particularly proud of its "virtual warriors." These are clinicians who really want to contribute but because of their vulnerable status cannot do patient facing work—so many are doing backroom functions supporting the front line. Consultants are also carrying out consultations by phone to prevent unnecessary admissions and reduce patient anxiety.

Barlow says that they had a head start on covid-19 by last year introducing the SMART system, in which cardiology and respiratory consultants join the on-call general medicine consultant in the emergency department between 9am and 9pm.

Mike van der Watt, chief

medical officer at the trust, says, "It was working extremely well and then with the challenge of covid-19 it was easy to bolster up the respiratory side. All we had to do was partition the emergency department into two separate areas."

Nottingham: "mega rotas"

At Nottingham University
Hospitals NHS Trust, Girling
says that the changes have
been "pretty high octane."
One clinical innovation has
been the creation overnight of
a respiratory advice line rota,
staffed by senior respiratory
physicians, which gives advice
to GPs, paramedics, and hospital
doctors across the region.

It enables direct access to a senior consultant, prevents inappropriate referrals, and reduces anxiety in the community. The first week saw a peak of 160 daily calls to the advice line, of which 60% were from ambulance staff, 20% hospital doctors, 10% GPs, and 10% from NHS 111.

John Walsh, consultant cardiologist at Nottingham, says that the changes have been a "revelation." He says, "We have managed to integrate nearly 1200 medical staff of all grades to provide a 'mega rota' coordinating care and educating each other across usual boundaries and silos.

"The medical and surgical divisions are now effectively

functioning as a single department with new structures implemented in days that ordinarily would take months."

Southampton: video clinics

At Southampton University NHS Foundation Trust, more than 90 outpatient services have been set up to run as video clinics, amounting to 300 consultations a week. The trust has enabled at-scale home working, with 758 of 1412 requests for home working by consultants and other clinical and administrative staff approved. Microsoft Teams has been established for all staff for remote meetings and multidisciplinary teams, with a results channel, which provides senior nursing staff and infection control teams with live results on inpatients testing positive for covid-19.

Chaand Nagpaul, BMA council chair, says that it is important to acknowledge all this work—not just the NHS Nightingale hospitals. He says, "While the NHS is increasing capacity in brand new covid-19 hospitals, it's vital that we also recognise the transformational efforts of doctors in each and every hospital throughout the UK to meet the escalating demands of the pandemic on the NHS."

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100 25 April 2020 | the**bmj**