Doctors challenge legality of PPE guidance

Two doctors have launched an urgent legal challenge to NHS guidance on personal protective equipment, which they claim fails to protect them from covid-19 infection.

Meenal Viz, a clinical fellow in medicine, and her husband, Nishant Joshi, a GP trainee, claim the guidance, which was issued at a time of continuing shortages of masks and gowns, fails to comply with international standards set by WHO or domestic laws on health and safety at work.

Viz, who is pregnant, recently protested outside Downing Street against PPE shortages, and Joshi is currently working in a hospital as part of his training. Both have been exposed to patients with covid-19.

Represented by the law firm Bindmans, they say they are concerned the guidance is unclear about the level of PPE considered acceptable, the risks to frontline staff of different levels of PPE, and the right to refuse to work without adequate equipment.

They accuse Matt Hancock, health and social care secretary for England, of failing to arrange the mass procurement of PPE either in the UK or through the EU and say recent changes to the guidance downgraded the level of protection. They also argue that the guidance fails to tackle the greater risks faced by black and Asian healthcare workers. Of the 19 doctors and dentists who have died from covid-19, 18 were from ethnic minority backgrounds (see p 130).

NHS Procurement, NHS Employers, and Health Education England have been included as interested parties in the legal challenge and have been sent a copy of the pre-action letter that was sent to Hancock and NHS England.

Joshi told The BMJ, “We are concerned the guidelines were based on supply rather than science, and indeed Matt Hancock openly admitted today on Good Morning Britain that ‘the guidelines are based on the use of our precious resources.’ It’s a matter of life and death so I would hope they take it seriously.”

A Public Health England spokesperson said, “The safety of those working on the front line in health and social care is our number one priority. The guidance, written with NHS leaders and agreed by all four chief medical officers, in consultation with royal and medical colleges, recommends the safest level of personal protective equipment. WHO has confirmed UK guidance is consistent with what it recommends for the highest risk procedures.”

Clare Dyer, The BMJ

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Covid-19
All essential workers can now be tested
All key workers in England and members of their households with symptoms of covid-19 will be able to get tested through an online system, the government promised on 24 April, although the site was struggling to meet demand soon after launching. Mobile testing units and a delivery service for home testing kits are also being deployed. Asked on BBC Radio 4’s Today programme whether he expected to meet his target of carrying out 100 000 tests a day by the end of April, the health secretary, Matt Hancock, said, “I do, but nothing is guaranteed in life.”

Study assesses effects of virus in pregnancy
Researchers at the University of Oxford launched an international study called INTERCOVID to evaluate the effects of covid-19 in pregnancy. They said that information was urgently needed to optimise pregnancy care, reduce maternal anxiety, and inform decision making about resource allocation. They will recruit women who have been exposed and not exposed to SARS-CoV-2 at any stage of pregnancy and will follow them and their newborns until hospital discharge. Sixty institutions from 29 countries have already joined the study.

Fifth of health workers may quit after pandemic
More than a fifth of healthcare workers in England—equivalent to 300 000 workers—reported being more likely to leave their role after the pandemic, in a poll of nearly 1000 healthcare professionals by the Institute for Public Policy Research thinktank (IPPR) and YouGov. The findings inform a report for IPPR, which proposes a comprehensive support package for frontline coronavirus staff, including sufficient personal protective equipment and testing, free hotel accommodation and grants to help with rent arrears, priority access to specialist therapy, a pay guarantee even if staff fall sick, and free childcare.

Hydroxychloroquine/azithromycin heart fears
New York doctors warned that patients with covid-19 who are treated with hydroxychloroquine and azithromycin should be checked repeatedly for cardiac abnormalities, after they found that most of 84 patients treated with the regimen had a prolonged QT interval after a few days. The QT interval was severely prolonged in 11% of the patients, which put them at high risk of arrhythmia and sudden cardiac death, the doctors reported in a letter to Nature Medicine. Four patients died from multiple organ failure without evidence of arrhythmia or severe QT prolongation, 64 patients remained in hospital, and 16 patients were discharged.

Extensive contact tracing controls spread in China
Contact tracing to rapidly isolate people who may be infected with covid-19 shortened the time it took to confirm new cases by two days (from 5.5 days to 3.2 on average) and reduced the time taken to isolate infected people by two days (from 4.6 to 2.7), in a study of 391 cases and 1286 of their close contacts in Shenzhen, China. Only three deaths occurred in the study group from mid-January to mid-February, found the study, published in Lancet Infectious Diseases. Strict quarantining was in place, which might not be replicable in many places, but near universal testing and intensive contact tracing with social distancing and partial lockdowns might work, said the researchers.

Second man is jailed for assault on ER doctor
A man was jailed for assaulting a doctor who was treating patients during the covid-19 crisis at University Hospital Southampton’s emergency department. Lee Welke, 34, was sentenced to 56 days in jail and ordered to pay a victim surcharge of £122 after what Southampton Magistrates Court heard was a “serious” assault on the doctor. A spokesman for University Hospital Southampton NHS Trust described the assault as “extremely unpleasant and distressing.” The sentence came just days after Gareth Rudge was jailed for six months for punching an emergency department doctor in the face and head at the Royal Gwent Hospital.

Cancer and other services to restart after pause during pandemic
Some NHS services that were temporarily stopped to release capacity for dealing with the covid-19 pandemic will restart immediately, Matt Hancock announced on Tuesday 28 April. England’s health secretary said the “restoration” of services would focus firstly on the most urgent, such as for cancer and mental health. Recom mencement was possible, he said, because numbers of hospital admissions from covid-19 were beginning to fall in most parts of the country, suggesting that the UK might be past its first peak of the pandemic.

Hancock told the daily Downing Street briefing on 27 April that decisions on resuming services would be made locally and on a hospital by hospital basis. “The exact pace of the restoration will be determined by local circumstances,” he said.

NHS hospitals in England were told on 17 March to suspend all non-urgent elective surgery, to help free up 30 000 of 100 000 general and acute beds to deal with covid-19.

Niall Dickson, chief executive of the NHS Confederation, said now was the right time to resume treatments. “Starting this work again needs to be done carefully, with local health leaders deciding what is best for their communities and what can be managed. We know some staff will need downtime to recover after what they have been through,” he said.

Gareth Iacobucci, The BMJ Cite this as: BMJ 2020;369:m1709
**Medicine**

**Overseas News**

**Chile issues passport for people with antibodies**
Chile became the first country to issue “immunity passports” to identify people who have recovered from covid-19 and those who have never shown symptoms but test positive for antibodies. Holders will be exempt from a nationwide curfew and other restrictions imposed on the general population. Some experts see Chile’s move as premature, given the unreliability of current antibody tests and reports from South Korea of reinfection in recovered patients.

**India pledges to protect health workers from abuse**
The Indian government issued an ordinance making violence against healthcare workers a non-bailable offence, punishable by as much as seven years’ imprisonment, after multiple incidents of violence and harassment against staff engaged in covid-19 care or contact tracing. Hospital doctors in Delhi in covid-19 care or contact tracing. Hospital doctors in Delhi in covid-19 care or contact tracing. Hospital doctors in Delhi have raised concerns about personal protective equipment shortages have complained about hostile hospital administrations.

**House of Commons**

**MPs warn of failure to tackle domestic violence**

MPs on the home affairs select committee called for a comprehensive, cross governmental covid-19 strategy on domestic abuse combining awareness, prevention, victim support, housing, and a criminal justice response during lockdown and afterwards, when demand may be high. New schemes to ensure victims can access urgent help during lockdown should also be expanded to include more pharmacies, supermarkets, and other retailers, said the committee. Without urgent action, it said, the UK would be dealing with serious consequences for a generation.

**Maternity care**

**Shropshire inquiry expands to nearly 1200 cases**
An inquiry into childbirth cases of “serious and potentially serious concern” at Shrewsbury and Telford Hospitals NHS Trust expanded to 1170 cases. Donna Ockenden, a midwife conducting the review, wrote to a further 270 families on top of 900 already being investigated to ask if they wanted their cases reviewed. An interim report found at least 42 babies and three mothers may have died avoidably and that more than 50 newborns may have sustained avoidable brain damage from 1979 to 2018.

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**Domestic Abuse**

**Calls to the National Domestic Abuse Helpline have seen an average increase of around 50% in calls and over 400% in visits to its website since lockdown measures began**

**Doughnuts Are Bad for You, Yes?**

Not so fast. Malhotra says that his tweet “absolutely disgraceful” and added, “Feeding junk food to already overweight and obese NHS staff? I will forward this to CEO of NHS England Simon Stevens personally and I can assure you he won’t be impressed especially as these foods are a root cause of increased death rates from covid-19.”

**Did People Go [Dough]nuts?**
You could say that. There have been strong opinions on both sides of the debate. On Team Doughnut, junior doctor Toby Morris tweeted, “Let us enjoy a cup of tea and a doughnut at a time of crisis.” While retired surgeon Chris Oliver said, “I tried very unsuccessfully to stop the sale of junk food.” He added, “I can see where Aseem is coming from but these are extraordinary times where people are looking for a break.” He added, “I think this does more harm than good.”

**Now I’m Confused**

Doughnut worry, we all are.

Abi Rimmer, The BMJ

Cite this as: BMJ 2020;369:m1670

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Cite this as: BMJ 2020;369:m1675
Doctors warned to be alert for myocardial injury

Doctors treating patients with known or suspected covid-19 should be vigilant for signs of acute myocardial injury, says a new rapid guideline from NICE. Symptoms of acute myocardial injury include chest pain, heart palpitations, severe tiredness, and shortness of breath and are similar to the respiratory complications of covid-19 so might be overlooked.

Patients in Italy
Acute myocardial injury was seen in 9.5% of patients who died with covid-19 in Italian hospitals, NICE pointed out, and its guideline is aimed at helping healthcare professionals who are not cardiology specialists identify, monitor, and manage patients with covid-19 and heart problems.

NICE recommends testing levels of high sensitivity troponin and N-terminal pro B-type natriuretic peptide and using electrocardiography to identify patients with suspected myocardial injury. Patients should be monitored to rapidly identify cardiac or respiratory deterioration.

Specialist cardiology advice should be sought when there is a clear diagnosis of myocardial injury, and high sensitivity troponin testing and ECG repeated daily in patients for whom suspicion persists.

Trust retracts advice to omit covid-19 from death certificates

An NHS hospital trust has been forced to withdraw guidance telling doctors that they need not write “covid-19” on the death certificates of patients who have died with the virus, after it was faced with legal action in the High Court.

In its “Guidance for Death Certification of Proven Covid-19 Patients During the Current Pandemic,” the unnamed trust told doctors that “pneumonia” or “community acquired pneumonia” was acceptable to list as the disease or condition leading directly to death. There was no requirement to write “Covid-19,” it advised, although this “may be mentioned, should the doctor wish,” as a disease leading to the direct cause.

The Good Law Project, a non-profit organisation dedicated to holding the government to account, threatened to take the unnamed trust to the High Court unless it withdrew the guidance, informed staff that it had been withdrawn, and reviewed all death certificates issued since the guidance was put out on 3 April.

In a letter sent on 17 April the Good Law Project threatened to apply for judicial review on the grounds that the guidance was irrational, demonstrated a material error of law, and breached the European Convention on Human Rights. The letter offered not to name the trust as long as it took the actions demanded by 23 April.

Review of certificates
On 21 April the trust agreed to the demands. It said that its medical director had emailed staff, withdrawing the document and instead directing staff to national guidance. It confirmed that it had requested a review, which was already under way, of death certificates produced since the guidance was issued.

The Good Law Project said in a statement, “We have no way of

We have no way of knowing whether this faulty guidance is an isolated incident or part of a wider problem

Good Law Project

Two thirds of NHS staff who have died were from ethnic minorities

Two thirds of healthcare workers who have died from covid-19 were from an ethnic minority group, and at least half were not born in the UK, researchers have found.

Tim Cook, professor of anaesthesia at the Royal United Hospital Bath and the University of Bristol, and colleagues looked at the deaths of 106 healthcare workers, 63% of whom were from an ethnic minority background.

Reporting in the Health Service Journal, they found that 18 of the 19 doctors and dentists who have died from covid-19 were from ethnic minority backgrounds. The same was true of 71% of the 35 nurses and midwives who have died, 56% of the 27 healthcare support workers who have died, and 29% of the 25 other staff who have died.

The causes of this excess mortality was not clear and could be biological, medical, or sociological, said the researchers, who highlighted the need for a concerted effort to seek explanations and solutions.

The team also found that “a minimum of 56 (53%) of those healthcare workers who died were not born in this country.” They called for the government’s inquiry into the deaths of ethnic minority healthcare workers to also look at staff who had migrated to the UK.

Specialty differences
A notable absence of deaths occurred among certain staff groups, the researchers said. Among the doctors, for example, the specialties where

Acute myocardial injury was seen in 9.5% of all patients who died in hospital in Italy with covid-19

Ingrid Torjesen, London

Cite this as: BMJ 2020;369:m1639
Test reporting is a "travesty of science"

A leading statistician has criticised the government’s daily reporting of covid-19 swab test results, saying they do not provide any reliable information.

“The UK’s data collection and reporting of swab testing is a travesty of statistical science, as you can draw no inferences whatsoever about the evolution of the epidemic,” said Sheila Bird (above), former programme leader at the MRC Biostatistics Unit, Cambridge Institute of Public Health. “Politicians only seem to be interested in the number of tests performed rather than what is actually happening in the epidemic,” she told The BMJ.

The Department of Health publishes the number of patients who have been tested and the number of positive tests. These are broken down into categories with figures reported daily for pillars 1, 2, and 4 (box). Bird, a member of the Royal Statistical Society’s covid-19 taskforce, said it made no sense that results from pillar 1 were combined and not reported separately. Critical workers will be potentially exposed more directly than their household members, she warned, adding, “The grouping into pillars is a political construct and is not the way an epidemiologist would have organised the results.”

Bird also said that swab tests should be reported by the date they were taken and should also include the age and sex of the people tested. This basic demographic information, already collected in Scotland, would enable more helpful analysis of the epidemic because serial tests for the same person were readily linked, said Bird.

She asked, “What confidence can we have that, when the lockdown ends, the UK’s public health system will be able to rapidly and transparently detect a resurgence of cases (which requires monitoring by sample date), and hence isolate and quarantine contacts?”

A Public Health England spokesperson said lab confirmed cases are reported according to swabbing date and the weekly reports include the distribution of cases and deaths by age and sex. The agency was working on improved systems to distinguish cases by place and data linkage, which might allow analysis of a subset of cases, the spokesperson said.

Bird queried why these data were not reported at the daily covid-19 press conferences.

Clare Dyer, The BMJ
Cite this as: BMJ 2020;369:m1641

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Clare Dyer, The BMJ
Cite this as: BMJ 2020;369:m1641
At what stage is the race for a Covid-19 vaccine?

The World Health Organization announced that as of 23 April 83 potential covid-19 candidate vaccines were being assessed, including seven that have been approved for human testing through clinical trials (box). The BMJ looks at what is known so far.

How difficult is it to create a covid-19 vaccine?

Robin Shattock, who is leading a covid-19 vaccine trial set to begin in June at Imperial College London, said that developing a vaccine should be easier than for other diseases, because, unlike influenza and HIV, the covid-19 virus seemed to be relatively stable.

Speaking on the BBC’s Today programme on 22 April, he said, “We are very confident that some vaccines will come through and work. There are so many teams working on different approaches, and this virus is not as difficult a target as some of the things we have seen before. So I think scientifically there is a very high chance of success.”

How long does it usually take to develop a vaccine?

Vaccine development is a lengthy process that normally takes more than 10 years and costs hundreds of millions of pounds. Clinical trials requiring years of testing in thousands of people usually begin after two to five years of research into the immune response and then another two years of preclinical trials involving animal testing.

If the vaccine is found to be safe and effective, it then must pass the regulatory requirements and gain approval. Even once this is completed, the process to manufacture and deliver a vaccine is expensive and complex, requiring specialist, highly regulated facilities.

In the current crisis, a new 12 to 18 month timeframe has been proposed, with teams around the world working with increasing speed to find an effective candidate. Huge sums of money are needed to fund a wide variety of candidates and approaches.

What happens if a successful vaccine is found?

Wellcome has emphasised that for a vaccine to be rolled out worldwide, requiring billions of doses, global manufacturing capacity must be built. To do this, the foundation said that manufacturing sites needed to be built before clinical trials were completed to ensure that production could begin as soon as a vaccine was approved. Sites should be distributed around the world to ensure equitable distribution.

Are countries collaborating?

WHO has brought together world leaders and health partners, including those from the private sector, in an initiative aimed at accelerating the development and production of new covid-19 vaccines, tests, and treatments, and to enable equal access across the world.

At a virtual launch on 24 April the heads of state of France, South Africa, Germany, Vietnam, Costa Rica, Italy, Rwanda, Norway, Spain, China and the US.

SEVEN CANDIDATE VACCINES APPROVED FOR HUMAN TESTING

1. The Chinese company CanSino Biological, in collaboration with the Beijing Institute of Biotechnology, has the only vaccine in a phase II trial. The vaccine uses an adenovirus vector, and the trial will look at adverse reactions within 14 days and at SARS-CoV-2 antibody levels at day 28. Results of the phase I trial have not been made available.

2. A vaccine from the Beijing Institute of Biological Products and the Wuhan Institute of Biological Products is also being evaluated, although little is known about it.

3. Sinovac, another Beijing based company, is testing its inactivated virus covid-19 vaccine (PiCoVacc) in a randomised, double blinded, placebo controlled phase I trial involving 144 adults and is planning a phase II trial with 600 people. A preprint concerning the vaccine’s effectiveness in mice, rats, and non-human primates found it conferred ‘complete protection’ against SARS-CoV-2 strains circulating worldwide.

4. A vaccine from the Beijing Institute of Biological Products and the Wuhan Institute of Biological Products is also being evaluated, although little is known about it.

5. Inovio Pharmaceuticals, a US company, began testing its DNA platform vaccine in April. Chief executive Joseph Kim told CNBC he thinks it is possible to meet a 12 to 18 month timeline for a covid-19 vaccine.

6. Another US company, Moderna, has developed a vaccine called mRNA-1273 with the National Institute of Allergy and Infectious Diseases. The first of 60 patients in the safety trial were injected in March. The vaccine, which uses an RNA platform, is being given in two doses 28 days apart.

7. BNT162 is a vaccine programme being developed by the German biotech company BioNTech and the US giant Pfizer. It involves four potential vaccines representing different mRNA formats and target antigens. The companies are planning further trials in China and the US.
Retired doctors step up to help with contact tracing

More than 400 environmental health professionals have signed up to a voluntary register run by the Chartered Institute of Environmental Health (CIEH) to help with contact tracing in England, Wales, and Northern Ireland, in the hope of getting the covid-19 outbreak in the UK under control.

Meanwhile, a team of retired doctors and public health experts in Sheffield, frustrated by the lack of contact tracing, have set up a community initiative—combining contact tracing with support for those needing to self-isolate.

Local responses

The UK’s decision to abandon tracing the contacts of people with symptoms of covid-19 has been widely criticised by doctors and public health experts who have pointed to countries such as South Korea, which used it to control the outbreak. Allyson Pollock, professor of public health and co-director of Newcastle University Centre of Research Excellence in Regulatory Science, told The BMJ that the government has, through cuts to local authorities and the Health and Social Care Act 2012, “decimated, fragmented, and carved out the local communicable disease response and that is why they do not have contact tracing on the ground.”

She said, “You can only get on top of a national epidemic by having local control and local responses. Three weeks ago, there were really no cases in nursing homes, and that’s when they should have put in the prevention measures. Now they need rapidly to rebuild that capacity and to integrate that with other teams like GPs and environmental health professionals.”

Gary McFarlane, CIEH Northern Ireland director, told The BMJ, “When this crisis started we realised that there may be a significant professional resource that found themselves unable to work. We also recognised the skills and knowledge that environmental health professionals have to offer and that could be deployed in a number of key areas to support national efforts to respond to the crisis.”

The Welsh government has confirmed that environmental health officers will be deployed as part of a mass community contact tracing drive in the planned next phase of coronavirus response efforts. Meanwhile, Public Health England’s medical director, Yvonne Doyle, told The BMJ, “Plans on scaling up contact tracing are being agreed, including how many people we will need, and we are talking to the CIEH and local authority colleagues as part of the development of those plans.”

Sheffield pilot

A team of retired doctors and public health experts in Heeley and Meersbrook, Sheffield, have launched a pilot to test whether they can carry out contact tracing in collaboration with a local general practice.

The initiative involves trained volunteers calling people referred by the practice and asking them for a list of people they have been in contact with. The volunteers then call those contacts, advise them on isolating, and direct them to testing services.

Speaking to The BMJ, Bing Jones, a former associate specialist in haematology, said that if the pilot succeeds he thinks that it would be easily scalable, as the team has been inundated with volunteers willing to help.

Scotland and Northern Ireland also look set to reintroduce contact tracing, with the latter starting a pilot next week.

We recognised the skills and knowledge that could be deployed to support national efforts to respond to the crisis

Gary McFarlane, CIEH

Could a vaccine end the pandemic?

WHO has repeatedly warned countries against relying on a vaccine to end the outbreak. Speaking at a briefing on 16 April, Catherine Smallwood, senior emergency officer at WHO Europe, said, “We don’t know when a vaccine will be available for use in our populations, and what we don’t want to do is take action now based on the situation now. We need to think of ourselves in a position of a new normal until such a time that a vaccine might become available.”

Ohid Yaqub, senior lecturer at the University of Sussex’s science policy research unit, also warned that “there is a long history of over-optimistic vaccine predictions” and that even if a vaccine became available it was “too early even to speculate whether it will have high efficacy or low efficacy.”

He added, “I therefore think public policy attention should continue to focus on testing and on healthcare system capacity, and it should focus on lockdown and managing the social costs of (partial) lockdown for as long as possible.”

Malaysia, and the UK (represented by the first secretary of state, Dominic Raab, because of the prime minister’s illness) were joined by the president of the European Commission, and representatives of the Bill and Melinda Gates Foundation, the Coalition for Epidemic Preparedness Innovations, GAVI (the Vaccine Alliance), and many other organisations.

The US was notably absent after President Donald Trump announced that it would freeze funding to WHO pending an investigation into its handling of the pandemic.

WHO’s director general, Tedros Adhanom Ghebreyesus, said, “Our shared commitment is to ensure all people have access to all the tools to prevent, detect, treat, and respond to the pandemic. The organisation can do this alone.”

The BMJ

Cite this as: BMJ 2020;369:m1679

The BMJ

Cite this as: BMJ 2020;369:m1638
A graffiti mural by street artist Rachel List pays tribute to the NHS on a wall in Pontefract, West Yorkshire. Rainbow Tears is just one of around 10 murals List has created in the town, including one to honour Tom Moore, who raised £29m for the NHS by completing 100 laps of his garden by his 100th birthday. List told the BBC, “I think people just want to show their appreciation for the NHS, and hopefully I have, in some small way, allowed that message to travel.”

Alison Shepherd, Kent
Cite this as: BMJ 2020;369:m1699
WE TURNED INTO A RAINBOW...
Clinical features of covid-19

The wide array of symptoms has implications for the testing strategy

Severe acute respiratory illness with fever and respiratory symptoms, such as cough and shortness of breath, comprise the working case definition of covid-19 used to select people for viral testing. This strategy captures typical symptomatic presentation, but imperfectly identifies unusual manifestations, such as patients without respiratory symptoms or only very mild symptoms. Reports of patients with unusual presenting symptoms are rising worldwide.

Atypical symptoms
Case series report gastrointestinal symptoms in 2-40% of patients, and diarrhoea can be the initial manifestation of infection. Whether SARS-CoV-2 leads to such symptoms directly by infecting the gastrointestinal tract, indirectly by neurological involvement, or through production of cytokines remains unknown. Viral RNA has been detected in stool samples, sometimes at high levels. This raises the possibility of faecal-oral transmission, which would have clear implications for infection control.

Taste or olfactory disorders were noted in up to 53% of the cases in a small cohort from Italy, and new anosmia is being proposed as a criterion for testing, especially in young people with few other symptoms. In one woman with covid-19, magnetic resonance imaging showed bilateral inflammatory obstruction of the olfactory clefts with no abnormalities of olfactory bulbs and tracts. Complete characterisation of patients with covid-19 and anosmia needs further research, however, as this usually transient observation is described after many respiratory viral infections.

Recent case series from China and the US describe other neurological symptoms among patients with covid-19, including ischaemic or haemorrhagic stroke, dizziness, headache, musculoskeletal disturbance, altered mental state, Guillain-Barré syndrome, or acute necrotising encephalopathy, without proof of direct viral invasion into the brain. Systematic testing for SARS-CoV-2 should be considered in patients with acute neurological events during the pandemic.

Cardiovascular events that have been associated with covid-19 in preliminary observations include myocardial injury, especially in patients with severe infections, myocarditis and myopericarditis with reduced systolic function, cardiac arrhythmias, heart failure, and misdiagnosis as acute coronary syndrome. Covid-19 was associated with a hypercoagulable state in a retrospective cohort study from China, probably increasing the risk for venous thromboembolic events including pulmonary embolism. Chest pain should therefore alert clinicians to the possibility of covid-19.

Finally, ocular manifestations such as conjunctival hyperaemia, chemosis, and increased secretions, were reported in up to 32% of infected patients in a Chinese case series, and SARS-CoV-2 RNA could be detected in tears. Diagnosis might be particularly complicated in specific populations: children frequently have milder disease than adults, with few or no symptoms. Infections might also be harder to identify in older people, whose symptoms could be masked. A mild pneumonia might cause only fever, a fall, or confusion, leading to misdiagnosis. Diagnostic delay has serious consequences for older adults, including increased mortality and nosocomial transmission. The threshold for testing should be lowered in this vulnerable group.

Few or no symptoms
Risk of transmission by people with few or no symptoms remains to be quantified. Case reports indicate that runny nose or sore throat can be isolated symptoms. Testing strategies that exclude patients with few symptoms are likely to miss a substantial proportion of cases.

Similar viral loads have been documented in the upper respiratory tract of both symptomatic and asymptomatic cases and in the presymptomatic phase. This has important implications for the effectiveness of any testing strategy and for contact tracing and containment measures.

To curtail active transmission of SARS-CoV-2, testing should be extended far beyond people who fit a narrow case definition.

To the Editor---Clinical features of covid-19 are rapidly changing. Here we summarise recent data that challenge the current case definition. The proportion of patients with typical symptoms is less than expected and suggests that testing needs to be extended far beyond those who fit a narrow case definition. Further population level screening is crucial to stopping active transmission.

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Is ethnicity linked to outcomes of covid-19?

Preliminary signals must be explored urgently

The novel disease 2019-20 coronavirus (SARS-CoV-2), is now a devastating global pandemic. Systematic reviews of ethnically homogeneous cohorts from China suggest that the key risk factors for hospital admission include age, male sex, and comorbidities such as cardiovascular disease, hypertension, and diabetes.1 

Concerns about a possible association between ethnicity and outcome in the UK were raised after the first 10 doctors to die from covid-19 were identified as being from ethnic minorities.2 These concerns were confirmed by data from the Intensive Care National Audit and Research Centre, showing that a third of covid-19 patients admitted to critical care units were from an ethnic minority background: 13.8% were Asian, 13.6% were black, and 7.8% were from other or mixed ethnic groups. Importantly these unadjusted descriptive data take no account of factors other than ethnicity that could influence the risk of critical care admission.

Ethnic minority groups have also been disproportionately affected by covid-19 in the US, highlighting potential racial, economic, and other inequalities.3

To get a clearer picture of ethnic disparities in incidence and outcome in the UK, we need detailed national data reported by ethnic group. This could be done through linking ethnicity data from Hospital Episode Statistics or Public Health England to mortality data from the Office of National Statistics. We welcome the announcement that the NHS and Public Health England will lead a review of the evidence on why ethnic minority populations seem to be disproportionately affected by covid-19.

Contributory factors
The higher observed incidence and severity in minority groups may be associated with socioeconomic, cultural, or lifestyle factors, genetic predisposition, or pathophysiological differences in susceptibility or response to infection. Possible susceptibilities include an increased risk of admission for acute respiratory tract infections,7 an increased prevalence of vitamin D deficiency,4 vaccination policies in their country of birth and immune effects,9 increased inflammatory burden, and higher prevalence of cardiovascular risk factors such as insulin resistance and obesity than white populations.10 Some of these are also risk factors for increased disease severity in covid-19.11

Interest has also focused on the possibility of ethnic differences in the expression of angiotensin converting enzyme 2 (the host receptor for SARS-CoV-2),12 and risk of both acute kidney injury13 and cardiac complications14 because of a higher prevalence of cardiovascular risk factors in ethnic minority populations.

Ethnic minority communities are also more likely to be socioeconomically disadvantaged than white communities and often live in extended cohabiting families, potentially increasing the risk of virus transmission. Ethnic minorities in the UK and US face several disadvantages, including poor housing, overcrowding, and being more likely to be employed in low paid essential jobs,15 all of which make social distancing more challenging.

These suggestions require urgent exploration through robust analysis of routinely collected prospective data on covid-19, including age, sex, underlying morbidity, place of residence, area clustering, sociodemographic factors, laboratory measures, and burden of undiagnosed disease to determine if the observed signal between ethnicity and covid-19 outcomes is real or an artefact. Some of these data are already available. However, mixed methods research will be required to fully understand the complex interplay between the various biological, social, and cultural factors underlying these early findings.

Clear evidence to confirm or rule out an association between ethnicity and outcome in covid-19 is important not only for the UK but also for other regions such as South Asia and Africa, where the pandemic is at an earlier stage. Meanwhile, populations of all ethnicities must continue handwashing and hygiene, social distancing and self-isolation when required. The public should also be encouraged to maintain healthy lifestyles to optimise cardiometabolic and mental health. Finally, this important information must be communicated in an accessible and culturally appropriate way.

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The uncertain future of UK clinical studies
The pandemic has halted many trials as focus shifts to covid-19. Gareth Iacobucci reports

On 7 April, the leading UK charity Cancer Research UK announced with “great regret” that it had decided to cut its funding for research by £44m this year, in response to huge fundraising shortfalls caused by the covid-19 pandemic.

The charity, which funds about half of all cancer research conducted in the UK, said it had been forced to cut funding for existing research grants and institutes by as much as 10% and funding for its network of researchers centres by around 20%.

“These cuts are substantial and will set back the cancer research effort within the UK, potentially for many years,” it warned.

Studies discontinued
It’s not just cancer that’s being affected by the pandemic but the whole of medical research. William van’t Hoff, chief executive of the UK government funded National Institute for Healthcare Research (NIHR)—the largest national clinical research funder in Europe—says that almost 90% of its non-commercial research has been paused, although more than half of its commercial research is still ongoing.

He tells The BMJ, “We absolutely recognise the impact that this [pausing of studies] has had for patients, but also for researchers who have been severely affected. I’m sure that in the short term they will understand this, but in the medium term we want to be ready to get going again.”

Van’t Hoff says that, as far as possible, NIHR will look to extend research contracts and have “an open mind” on whether it will continue to fund additional research costs beyond existing schedules. But he acknowledges, “Some research, very sadly, will not continue. It may be expired, the situation may have changed, the science may have moved. That’s regrettable, but there is a willingness to do our best to consider what is feasible.”

Fundraising hole
Medical research charities, most of which do not benefit from endowments or government grants, are undoubtedly taking the most severe hit from the pandemic.

In an open letter to its researchers, Cancer Research UK said that a huge drop in donations—resulting from shop closures, cancellations of mass fundraising events, and legacy reductions in the wake of the covid-19 crisis—had left a £120m hole in its income from fundraising (box 1).

The charity has postponed any new funding commitments while the pandemic is ongoing, meaning that no new research projects will be funded for “at least the first half of this year.”

Many other charities are facing similar struggles: Action Medical Research, the Motor Neurone Disease Association, and the Alzheimer’s Society are among those that have launched emergency fundraising appeals to try to compensate for losses in income.

Box 1 Charity case study—Cancer Research UK
Iain Foulkes, executive director of research and innovation at Cancer Research UK, tells The BMJ that the combination of its charity shops being closed and the cancellation of Race 4 Life, its biggest mass participation event, is costing the charity “£15m-£20m a month” during the pandemic. These alone mean the charity is estimating a loss in the region of about £120m this year.

And Foulkes predicts that this is likely to rise when the expected downturn in legacy donations from the public is factored in—often donated in the form of stocks and shares, cash, or sale of houses. He explains, “We’re one of the biggest charities in the country and we carry reserves, but only between three and four months, and we’re already starting to have to draw on those.

“We hope it’s a one-off. But we’re all in uncharted territory, so we will have to think about what else we may need to do in the future if this carries on.”

Some research, very sadly, will not continue
William van’t Hoff, NIHR

5 years lost
Charlie Swanton, Cancer Research UK’s chief clinician, who is a group leader at the Francis Crick Institute and professor of oncology at University College London Hospitals, tells The BMJ that his research on cancer is now on hold.

Swanton’s research laboratory
Potentially lost five years,” he tells of medicine.”

“...for any area research...”

Severely impaired as a result of cancer research is going to be hindered. It’s unavoidable, and we believe that our research work is going to be severely impaired as a result of this crisis. And that’s just cancer research; you can imagine that the same would hold true for any area of medicine.”

Shifting focus

In the meantime, the UK’s clinical research focus has been diverted towards covid-19 (Box 2). UK Research and Innovation, the national funding agency for science and research in the UK, has moved to refocus its activities and to streamline applications for new research, including publishing guidance for researchers who currently hold grants, on how they might repurpose their funds for covid-19.

The Wellcome Trust (which, unlike many research charities, is funded from endowments) has committed £50m ($60m) to set up a joint covid-19 Therapeutics Accelerator initiative with the Gates Foundation and Mastercard, to coordinate research efforts and remove barriers to drug development.

Most researchers at Swanton’s lab have been redeployed to a covid-19 testing lab, which he helped set up at the Crick Institute to help boost capacity to test NHS staff for coronavirus. It’s here that he says his focus will be until his other work can recommence.

“...cut a long story short, my research life has been put on hold,” explains Swanton. “Getting over this crisis is our most critical and important goal right now. That’s why we’ve repurposed the laboratory, and we are working with many others at the Crick to focus purely on supporting and helping the NHS.”

Van’t Hoff says that, like the whole of society, the covid-19 crisis has forced the whole research sector to “rethink the way we do things,” which he believes is no mean feat.

“It’s incredibly impressive to me how joined up the health system and the health research organisations have been to try and speed up the access, volume, and delivery of research to help patients, the country, and the NHS,” he says.

Swanton voices similar sentiments, but he’s also anxious about what the future holds. “The coronavirus question dominates everything, and the length of time this goes on will directly influence the number of obstacles that exist to set the lab up again when we all come back eventually,” he says. “If this goes on for six months or more, we could be looking at a very different world from a research perspective when it comes to the financial resource to keep Britain’s research and development engine going. That is a big concern to us.”

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Box 2 | How the research world has shifted its focus to covid-19

Much of the UK’s research energy is now being channelled into covid-19, with a focus on studies that will have the biggest impact in the shortest time. Earlier this month the four chief medical officers and NHS England’s national medical director wrote a joint letter to every NHS trust in the country, asking them to enrol patients into nationally prioritised covid-19 clinical trials. Their letter highlights three key interventional studies:

- PRINCIPLE, a platform trial of interventions against covid-19 in older people;
- RECOVERY, a trial to evaluate whether existing or new drugs can help patients admitted to hospital with confirmed covid-19 (see p140); and
- REMAP-CAP, a platform trial for severely ill patients with covid-19. The letter advises clinicians not to use off-licence treatments outside a trial. “Use of treatments outside of a trial, where participation was possible, is a wasted opportunity to create information that will benefit others,” it says.

William van’t Hoff, chief executive of the National Institute for Healthcare Research, tells The BMJ that the institute is overseeing around 25 covid-19 studies, selected from more than 360 submitted for assessment, and has already supported the recruitment of more than 11 000 patients. “We’re prioritising studies that are ready to go, that are likely to deliver results that are generalisable to the NHS in short order in high time,” he says.

On a global scale, a trial tracker service set up by the advocacy group TranspariMED estimates that more than 1000 clinical trials of potential covid-19 treatments and interventions have been launched worldwide (to 28 April). The non-profit Anticancer Fund has produced an open access online database listing all of the interventional clinical trials ongoing in covid-19. As of 28 April it had identified 891 clinical trials registered around the world, with 253 drugs involved.

CRUK
MEDICAL RESEARCH

The covid-19 study resetting expectations for clinical trials

Emma Wilkinson talks to the researchers who recruited 7000 NHS patients in a few weeks

In a short space of time, doctors and researchers have learnt a lot about how covid-19 progresses in the people infected. There’s even a handful of potential treatments—but no good evidence on whether they work or do harm.

Yet, as soon as this coming June, the RECOVERY trial may be able to provide clinicians with some answers. With 6800 NHS patients signed up from 170 sites around the UK (as of 22 April; live figures are available at www.recoverytrial.net [for site-staff]), the stunning pace of this recruitment is in keeping with a trial that went from concept to first patient in less than a fortnight.

Martin Landray, professor of medicine and epidemiology at the University of Oxford, and his colleagues knew that delays in setting up clinical trials had hampered efforts in treating Ebola. By the time everything was in place the outbreak had passed, and, when the next wave hit, clinicians were back to square one.

So, at the start of March, while watching the pandemic unfold in Italy, Landray and colleagues realised that they had a window to prepare—and to do it at a speed completely unheard of in clinical trials. “On Tuesday we wrote the protocol and on Friday submitted it to the MHRA [Medicines and Healthcare Products Regulatory Agency] ethics committee,” he says. “Nine days after we wrote the protocol the first patient was enrolled.”

Dynamic design

RECOVERY aims to evaluate drugs with the potential to help patients admitted to hospital with confirmed covid-19. The team took the pragmatic approach that to include a drug would require a reason to believe that it might work, a known safety profile, and enough of a supply for a large trial. The design is dynamic, with the expectation that drugs will be added and removed as the evidence changes or as new candidates are developed.

Patients are being randomly assigned to usual care or to one of four treatments: lopinavir-ritonavir, low dose dexamethasone, hydroxychloroquine, or azithromycin. The team has also just gained additional approval for patients who meet specific criteria to be randomly allocated a second time, to a tocilizumab arm. The main outcomes are death, discharge, need for ventilation, and need for renal replacement therapy at 28 days.

This is the largest trial being conducted for covid-19 anywhere, the researchers say. Peter Horby, trial co-leader and professor of emerging infectious diseases and global health, says that its size is critical. He explains, “I’ve been involved in fairly small scale trials, and what you often find is that you don’t see a significant effect, and that leads to a drug being ditched because they are not powered to identify modest but important findings.

“With this kind of acute severe viral pneumonia it is going to be very challenging to find something that will have a dramatic effect, and we should be designing trials accordingly.”

United (Kingdom) effort

Anthony Kerry, consultant respiratory physician at the Great Western Hospitals NHS Trust in Wiltshire, says that his hospital has recruited 57 patients in 20 days thanks to a large team of clinicians, research nurses, and pharmacists who have worked to make this happen. “People have been ignited to take part, and it’s really very well spread across large parts of the UK,” he says—“and that gives us quality in terms of numbers but also a range across the UK population.”

A few factors make the UK well placed to get this kind of study ready so quickly. A nation united in its support for the NHS is one key aspect, says Kerry, who believes that the unique nature of the NHS as an “idea” that people can really get behind has helped the speed of recruitment. Landray also highlights key advantages in terms of regulation and ethics, a good NHS trials platform, central funding, and control over drug supplies, as well as having the chief medical officers write to every trust to urge them to take part.

Yet the investigators knew that they would need to scrap much of the usual bureaucracy whereby trials of this size usually take months, if not years, to set up. “For all of us, that was quite refreshing,” says Landray. “We had this opportunity to focus on what really needs to be done and not be distracted by the minutiae.”

Everything was streamlined, with all documents freely available online, including the protocol and approval. “What we are seeing is what happens when people are empowered and motivated,” Landray adds.

Obstacles remain, most notably in getting timely data from primary and secondary care, which will be especially important in the long term. And only 10% of potential patients are currently signed up, suggesting that there is scope to do more.

So far, recruitment has surpassed expectations—but it will, of course, be results that matter. “If we knew the answer we would have been doing that all along,” says Landray. “There are a number of people who think these drugs are wonderful and some who think the drugs are terrible, but none of them can prove that they’re right.”

Martin Landray (far left) and Peter Horby are co-leaders of the RECOVERY project which took nine days from protocol to enrolling its first patient
Mitigating the wider health effects of covid-19 pandemic response

Health inequalities are likely to widen without action to support those most vulnerable to the economic and other effects of social distancing measures, argue Margaret Douglas and colleagues.

Countries worldwide have implemented strict controls on movement in response to the covid-19 pandemic. The aim is to cut transmission by reducing close contact, but the measures have profound consequences. Several sectors are seeing steep reductions in business, and there has been panic buying in shops. Social, economic, and health consequences are inevitable.

The health benefits of social distancing measures are obvious, with a slower spread of infection reducing the risk that health services will be overwhelmed. But they may also prolong the pandemic and the restrictions adopted to mitigate it. Policy makers need to balance these considerations while paying attention to broader effects on health and health equity.

Who is most at risk?

Several groups may be particularly vulnerable to the effects of both the pandemic and the social distancing measures (box). The table summarises several mechanisms through which the pandemic response is likely to affect health: economic effects, social isolation, family relationships, health related behaviours, disruption to essential services, disrupted education, transport and green space, social disorder, and psychosocial effects. The figure shows the complexity of the pathways through which these effects may arise. Below we expand on the first three mechanisms, using Scotland as an example. The appendix on bmj.com provides further details of mechanisms, effects, and mitigation measures.

Women, young people, and those who are already poor will fare worst

<table>
<thead>
<tr>
<th>GROUPS AT PARTICULAR RISK FROM RESPONSES TO COVID-19</th>
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<tbody>
<tr>
<td>• Older people—highest direct risk of severe covid-19, more likely to live alone, less likely to use online communications, at risk of social isolation</td>
</tr>
<tr>
<td>• Young people—affected by disrupted education at critical time; in longer term most at risk of poor employment and associated health outcomes in economic downturn</td>
</tr>
<tr>
<td>• Women—more likely to be carers, likely to lose income if need to provide childcare during school closures, potential for increase in family violence for some</td>
</tr>
<tr>
<td>• People with mental health problems—may be at greater risk from social isolation</td>
</tr>
<tr>
<td>• People who use substances or in recovery—risk of relapse or withdrawal</td>
</tr>
<tr>
<td>• People with a disability—affect ed by disrupted support services</td>
</tr>
<tr>
<td>• Homeless people—may be unable to self-isolate or affected by disrupted support services</td>
</tr>
<tr>
<td>• Undocumented migrants—may have no access to or be reluctant to engage with health services</td>
</tr>
<tr>
<td>• Workers on precarious contracts or self-employed—high risk of adverse effects from loss of work and no income</td>
</tr>
<tr>
<td>• People on low income—already have poorer health and are more likely to be in insecure work without financial reserves</td>
</tr>
<tr>
<td>• People in institutions (care homes, special needs facilities, prisons, migrant detention centres, cruise liners)—as these institutions may act as amplifiers</td>
</tr>
</tbody>
</table>

Economic effects

People may experience loss of income from social distancing in several ways. Although some people can work at home, many cannot, especially those in public facing roles in service industries, a group that already faces precarious employment and low income. Others may be affected by workplace closures, caused by government mandate, an infected co-worker, or loss of business. Yet more may be unable to work as school closures require them to provide childcare. In the UK, 3.5 million additional people are expected to need universal credit (which includes unemployment payments) as a result of the pandemic.

The growth of the informal, gig economy in some countries has created a large group of people who are especially vulnerable as they do not get sick pay, are on zero hours contracts, or are self-employed. They can easily lose all their income, and even if this is only temporary they often lack the safety net of savings. An important risk is housing security, with loss of income causing rent or mortgage arrears or even homelessness.

School closure will affect low income and single parent families especially severely because they need to meet an unexpected need for childcare and lose the benefit of free school meals. They may also face increased costs for heating their homes during the day. In some countries, welfare systems impose strict conditions on recipients that cannot be met by those in isolation.

The link between income and health is well established and acts through several mechanisms. Income allows people to buy necessities for life, access health enhancing resources, avoid harmful exposures, and participate in normal activities of society. Low income also increases psychosocial stress. The minimum income for healthy living establishes a standard required to maintain health in different settings. Crucially, not everyone is equally likely to lose income. Women, young people, and those who are already poor will fare worst. To avoid widening health inequalities, social distancing must be accompanied by measures to safeguard the incomes of poor people.

KEY MESSAGES

• Social distancing measures to control the spread of covid-19 are likely to have large effects on health and health inequalities
• These effects have numerous mechanisms, including economic, social, health related behaviours, and disruption to services and education
• People on low incomes are most vulnerable to the adverse effects
• Substantial mitigation measures are needed in the short and long term
Future challenges

The longer term effects may be substantial. If businesses fail, many employees will become unemployed. Those losing their jobs in middle age may never return to the workforce. Sectors that are especially vulnerable include hospitality, entertainment, transport, leisure, and sport. Unemployment has large negative effects on both physical and mental health, with a meta-analysis reporting a 76% increase in all-cause mortality in people followed for up to 10 years after becoming unemployed.

The pandemic has already caused downgrading of economic forecasts, with many countries facing a recession. The health consequences of a recession are complex. Economic downturns have been associated with improvements in some health outcomes, especially traffic injuries, but worsening mental health, including increases in homicide and suicide. However, these harmful effects can be prevented by progressive social policies; it is the policy response to a recession, rather than the recession itself, that determines longer term population health.

Throughout history, some people have viewed any crisis as an opportunity. Klein described how “disaster capitalists” take advantage of natural and human influenced disasters. There is clear potential for price gouging (profiteering through increased prices during supply or demand shocks) on essential goods. Once the pandemic recedes, there could be profound changes to the economy that may disadvantage less powerful populations, such as through privatisation of public sector services. However, there may also be opportunities for the economy to be rebuilt “better,” depending on public and political attitudes and power balance.

Social isolation

Advising or compelling people to self-isolate at home risks serious social and psychological harm. Quarantine of people exposed to an infectious disease is associated with negative psychological effects, including post-traumatic stress symptoms, which may be long lasting. The effects are exacerbated by prolonged isolation, fear of the infection, frustration, boredom, inadequate supplies and information, financial loss, and stigma. These effects are less when quarantine is voluntary and can be mitigated by ensuring clear rapid communication, keeping the duration short, providing food and other essential supplies, and protecting against financial loss.

In Scotland, a third of the population lives alone and 40% of this group are of pensionable age. Older people are also less likely to use online communications, making them at particular risk of social isolation during social distancing. Social isolation is defined as pervasive lack of social contact or communication, participation in social activities, or a confidante.

Long term, social isolation is associated with an increase in mortality of almost a third. Prolonged periods of social distancing could have similar effects. People who are socioeconomically disadvantaged or in poor physical or mental health are at higher risk. Online and telephone support needs to be provided for vulnerable groups, especially those living alone.

Family relationships

Social distancing measures will place many people in close proximity with family members all or most of the time, which may cause or exacerbate tensions. Concern has been raised about potential increases in family violence during restrictions in the UK. Risk factors for partner and child abuse include poverty, substance misuse in the home, and previous history of abuse. Around 60000 domestic abuse incidents occur in Scotland every year, with young women most affected, and over 2500 children are on the child protection register.

It is important to maintain social work and community support for vulnerable families, including safety advice for women at risk of abuse. Domestic abuse advocates have called for enhanced support, including allocation of hotel rooms for women at risk.

School closures may add to stress in families as parents try to home school children, often juggling this with home working. This burden may fall disproportionately on women. As well as academic learning, schools support development of social and other skills. Prolonged school closures could cause adverse effects on educational and social outcomes for young people in families that lack study space and access to home computing. Some children who are not at school may be at risk of online or other forms of exploitation—for example, by drug dealers—or of being recruited into gangs. Realistic expectations of home schooling, provision of food for those eligible for free school meals, and outreach support for the most vulnerable children will be needed during school closures. Many children will need extra support on return to school.
Mitigating adverse effects

In addition to the direct disease burden from covid-19, the pandemic response is already causing negative indirect effects such as those described above. These are borne disproportionately by people who already have fewer resources and poorer health. Prolonged or more restrictive social distancing measures could increase health inequalities in the short and long term.

Our assessment is based on rapid scoping of potential impacts and a non-systematic review of diverse publications, so there is a high degree of uncertainty about the extent of some impacts. However, the range of health concerns identified, beyond those directly attributable to the virus itself, should be recognised in developing and implementing responses. The effects may also vary by context. In low and middle income countries without social safety nets, the effects on population health and health inequalities are likely to be worse than in richer countries, as is beginning to be seen in India.24

Actions must be targeted to support the most vulnerable people. The extraordinary measures in the UK to allow businesses to continue paying staff will help mitigate the harms for many workers. But it is important to consider people in precarious work who will not be covered by these measures, and to consider longer term support for those who continue to experience problems once the measures expire. A large multiagency response will be needed to deal with the wide range of needs we have identified.

In the longer term, policy decisions made now will shape the future economy in ways that could either improve or damage sustainability, health, and health inequalities. These include decisions about which sectors to prioritise for support, whether to direct financial support to business or workers, and how to fund the costs. To protect population health it will be essential to avoid a further period of austerity and the associated reductions in social security and public service spending. Instead we must build a more sustainable and inclusive economy.10

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Concerns are being raised that one possible consequence of efforts to contain covid-19 could be an increase in deaths from other causes. It’s still relatively early in the spread of the pandemic. There will be lags in the reporting of deaths, as well as issues around attributing the causes of death. But could this concern be real? One problem may be that people may not seek care, perhaps because they fear contracting covid-19 or they don’t want to burden the NHS while it is under pressure. An indicator of this are the March data for the numbers of emergency department attendances and for all emergency admissions in England. These show a big fall from 2019 to 2020: attendances dropped by 29% and emergency admissions by 23% (fig 1).1

What we don’t know of course—at least not yet—is who has stayed away and what happened to them. Many, presumably, will have self-treated or used other services, such as general practice. But these are large falls, and the fear would be that some who didn’t attend emergency departments will have died, or may die in the coming months, when timely treatment may have prevented their death. Deliberate delays by hospitals in treating non-covid patients in order to make capacity to deal with the pandemic will be a particular concern—though data on postponed treatments are not yet available.

On actual deaths, weekly reporting from the Office for National Statistics (ONS) on the number of registered deaths shows that, in the week ending 17 April, 11854 more people died than the equivalent five year average for this week (fig 2).2 This may be some natural variation around the average, but given the high numbers above the average in the previous week the rise looks less than random.

It’s clear that the number of death registrations mentioning covid-19 accounted for a large part of this excess (8758)—but not all. Deaths with an underlying cause of respiratory disease accounted for 1776 deaths. Other deaths accounted for 1320.

These figures might support a contention that the measures being taken to deal with covid-19 may be having a negative effect on other causes of death, particularly other respiratory causes. But there’s a potential problem with the death data: it may be that deaths from covid-19 have been undercounted and that increases in other causes have been artificially boosted.

ONS figures on registered deaths by place of occurrence could support this.7 Over the four weeks from 13 March to 17 April total deaths increased week on week by 11 334, from 11 017 to 22 351 (a rise of nearly 103%). Covid-19 accounted for 8753 deaths—leaving 2581 due to other causes.

DATA BRIEFING

What is happening to non-covid deaths?

John Appleby unpicks the data on deaths from causes other than covid-19

### In the week ending 10 April, 7996 more people died than the equivalent five year average for the week

<table>
<thead>
<tr>
<th>Year</th>
<th>Attendances/admissions (millions)</th>
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<tr>
<td>2011</td>
<td>2.5</td>
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<tr>
<td>2012</td>
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<tr>
<td>2019</td>
<td>2.0</td>
</tr>
<tr>
<td>2020</td>
<td>1.5</td>
</tr>
</tbody>
</table>

- **29% drop in attendances on March 2019**
- **23% drop in total emergency admissions on March 2019**

**Fig 1 | Emergency department attendances and emergency admissions in England, March figures 2011–20**

<table>
<thead>
<tr>
<th>Week number</th>
<th>Registered deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Covid-19 mentioned on death certificate</td>
</tr>
<tr>
<td>1</td>
<td>Underlying cause: respiratory disease</td>
</tr>
<tr>
<td>1</td>
<td>All other deaths</td>
</tr>
<tr>
<td>3 Jan</td>
<td>Average total deaths over past five years</td>
</tr>
</tbody>
</table>

**Fig 2 | Weekly registered deaths in England and Wales, 3 January to 17 April 2020**

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1. 2 May 2020 | the bmj
But, as figure 3 shows, around 70% of the change in covid-19 deaths over the six weeks to April 17 occurred in hospitals (6102), with care homes accounting for 23% (2050), with the remainder in people’s homes and other places. Given the relatively low level of covid-19 testing outside hospitals, some—or many—of the other deaths in homes and care homes (which increased by 4225) may also have been related to covid-19. Indeed, the representative body for care homes, Care England, estimates that there have been around 7000 covid-19 related deaths in care homes so far compared with the 1043 reported by ONS since the end of December 2019.

**Random variation?**

To complicate the picture, during March, while age standardised death rates for covid-19 show it was the third most common cause of death, ischaemic heart disease was 26% lower than the five year average for March, and cerebrovascular and chronic lower respiratory diseases were 18% and 10% lower, respectively (fig 4). Are these figures random variation around the average, or could they suggest that some of those whose deaths might previously have been classified from these causes have succumbed instead to covid-19?

For the moment, it seems impossible properly to answer concerns about the wider effect current measures might be having on the health of the population. The data are incomplete, too uncertain, and too fast moving to support any reliable conclusions.

The current intense public scrutiny and interest in data on deaths from covid-19 have exposed—even in statistically sophisticated countries such as the UK—the difficulties of constructing a comprehensive and consistent picture of the situation as it unfurls from week to week. In the context of a global pandemic and the need for internationally comparative data, the position in many other countries is even worse. The World Health Organization estimates that although 84 countries collect usable data on deaths and cause of death, 81 collect only very low quality data or fail to register deaths at all, with just 6% of African countries collecting cause of death data (fig 5).

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Fig 3 | Change between the week ending 13 March and 17 April 2020 in registered deaths in England and Wales by place of occurrence

Fig 4 | Top five causes of death for March 2020 in England and Wales compared with five year average for March

Fig 5 | Percentage completeness of cause of death data for global regions during 2009 to 2017
Health surveillance during the pandemic
Design engineering professor Rafael Calvo and colleagues argue in this editorial that the ethical questions raised by health surveillance will only increase. “Often they are framed as a zero sum trade-off between security and privacy,” they write. “But the psychology of autonomy suggests a productive alternative—when both sides endorse wellbeing as the jointly valued goal, health surveillance can be a positive sum game, both effective and chosen freely.”

How Japan squandered its early jump
Japan’s low covid-19 infection numbers were a wonder, but they led to a lapse in public vigilance. Now, an explosion of cases has led to an escalation of measures—but, as this feature reports, these measures may be too little, too late.

Death certification in England and Wales
Thorough scrutiny of deaths remains essential during the epidemic, Tom Luce, who chaired the 2001-03 review of death certification and investigation, writes in an editorial. All deaths should be carefully scrutinised, Luce says, and doctors should not assume either that they need not report a death to a coroner because covid-19 is on the death certificate or that the virus did not contribute to death because no test was done.

South Africa’s early success
Decisive action has been the hallmark of South Africa’s early success against coronavirus and government officials say that a swift move to lockdown and widespread screening has been the key to fighting the virus. This feature examines why an abundance of caution remains.

Precarious position of Spain’s nursing homes
In Spain, the country with the most coronavirus cases in Europe, the impact of the outbreak in nursing homes is having a dramatic and tragic effect, as a feature reports.

Prison crowding, release policies, and covid-19
Safe release of prisoners could reduce community transmission, academics from the Kirby Institute for Infection and Immunity in Society at the University of New South Wales argue in this editorial. They say that citizens held in prisons and other detention facilities need to be considered as part of the broader public health response to covid-19, given their vulnerability to infection.

Death and dying during the pandemic
New expressions of humanity help dispel fear and protect the mental health of bereaved families, a consultant in palliative medicine and a member of the public with experience of emergency and end-of-life care say in this editorial. “We must look for signs of compassion fatigue in our colleagues and support each other,” they say.

Impact on US cancer care
American oncologists are rushing to prioritise the patients at greatest risk from covid-19, institute new protections, and learn from their collective experiences, as this feature reports.

What the Diamond Princess taught us
In the early days of the covid-19 pandemic, there was one place besides China that became infamous as a hotbed of transmission: a cruise ship. This feature looks at the crucial lessons that the ship has taught epidemiologists.

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Talk Evidence podcast
Matters around covid-19 and the world of evidence are discussed in the regular BMJ Talk Evidence podcast. Recent episodes have looked at which drugs are showing promise, prevention measures in care homes, waste in covid-19 research, understanding data on death rates, prognostic models of the disease, and the ethical matters raised by the pandemic.

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