Healthcare staff in the West Midlands have been told not to start chest compressions or ventilation in patients who are in cardiac arrest if they have suspected or diagnosed covid-19 unless they are in the emergency department and staff are wearing full personal protective equipment (PPE).

The guidance from the University Hospitals Birmingham trust says patients in cardiac arrest outside the emergency department can be given defibrillator treatment if they have a “shockable” rhythm. But if this fails to restart the heart “further resuscitation is futile.”

If a patient with suspected covid-19 is in cardiac arrest they should be given cardiac compressions and be ventilated only if they are in the emergency department and the person attending them is wearing aerosol generating procedures PPE. That means wearing an FFP3 mask, full gown with long sleeves, gloves, and eye protection. The advice rests on the premise that cardiac compressions risk virus particles being released into the air that could infect staff.

In an email to staff, Nick Crombie, associate medical director, acknowledged there was unease about the policy. But he said the pandemic required action that would be unthinkable at other times.

“Every patient we see could potentially not only harm us but our families. In this situation, we are the front line and we have to get into the mindset of putting our own safety first. We HAVE to be safe,” he wrote. “This is not about lack of PPE or money.”

The Birmingham guidance differs from the Resuscitation Council UK’s advice only in the number of shocks recommended: one instead of three. The council’s guidance also says that staff should put on full PPE for aerosol generating procedures before initiating CPR in patients with covid-19.

The picture is complicated by the latest advice from England’s Department of Health and public health bodies in England, Wales, Scotland, and Northern Ireland updated on 27 March. This says that “chest compressions and defibrillation (as part of resuscitation) are not considered AGPs” and can be carried out without full PPE “while awaiting the arrival of other personnel who will undertake airway manoeuvres.” Whereas WHO lists CPR as an aerosol generating procedure.

Jerry Nolan, a member of the Resuscitation Council UK’s executive committee and chair of the European Resuscitation Council, said that the

(Continued on page 2)
Birmingham guidelines were particularly restrictive. He said that resuscitation experts all over the world were currently wrestling with advice for managing covid-19 patients. A systematic review of the evidence had been completed by the International Liaison Committee on Resuscitation, which will publish its findings imminently, he said. However, “there was no high quality science one way or the other” as to whether chest compressions could lead to infection. Nolan added, “A consensus is evolving that chest compressions are highly likely to be generating, at the very least, droplets and probably airborne particles.”

Nolan acknowledged that as the pandemic evolved in the country the Birmingham policy might become appropriate “depending on how bad things become.”

“Unexpected cardiac arrest among these patients may not be common,” he told The BMJ, “but I think we must do all we can to plan ahead and, where appropriate, implement do-not-attempt cardiopulmonary resuscitation decisions or closely track these patients and intervene before they have a cardiac arrest.

“If someone with covid-19 has a cardiac arrest caused by viral pneumonia, then the chances of survival are very small. The problem is for the many patients who are awaiting test results and who are treated as though they have covid-19. If it turns out they don’t, and they have a cardiac arrest from a potentially reversible cause but no resuscitation attempt is made, that would be distressing.”

Andrew Goddard, president of the Royal College of Physicians, told The BMJ, “Cardiac arrest in a patient with covid-19 will have a number of possible causes, many of them unrelated to covid-19. It would be a mistake to treat patients as having a single diagnosis at this time.”

A spokesperson for University Hospitals Birmingham NHS Foundation Trust said, “These are guidelines, and our clinical staff are empowered to make individualised, context dependent judgments when opportunities to deliver timely cardiopulmonary resuscitation do arise.”

A spokesperson for Public Health England said that the national guidance had been reviewed by the New and Emerging Respiratory Virus Threats Advisory Group, “and it is their expert consensus that chest compressions and defibrillation are not APGs.”

Mercedes F1 to provide alternative to ventilator

Formula one team Mercedes F1 will produce continuous positive airway pressure (CPAP) machines for the NHS to use on covid-19 patients with serious lung infections, as a less invasive alternative to ventilators.

In collaboration with mechanical engineers at University College London and clinicians at University College London Hospital, the company has produced a CPAP machine that can be rapidly reproduced. It has now been approved by the Medicines and Healthcare Products Regulatory Agency. One hundred devices are being delivered to UCLH for clinical trials, with many more planned for roll out across the country.

CPAP machines—used for sleep apnoea—work by pushing an air-oxygen mixture into the mouth and nose at a continuous rate. They can work for covid-19 related pneumonia—which affects the ability of the alveoli to absorb oxygen—because the pressure allows the alveoli to stay open when the patient breathes out, supporting oxygenation and making breathing easier. In comparison, invasive ventilators deliver directly into the lungs, requiring heavy sedation and a tube placed into the patient’s trachea.

CPAP can therefore be a good alternative for many patients, as it is effective while being less invasive, does not require specialist nursing or intensive monitoring, and patients can be weaned off and put back on again if needed. Despite this, there is a short supply of the machines in the UK, a problem that Mercedes could solve.

UCLH critical care consultant Mervyn Singer said, “These devices will help to

**US approves convalescent plasma**

The US Food and Drug Administration has approved the use of plasma from recovered patients to treat people who are critically ill with covid-19, provided that doctors get approval over the telephone.

The method has been used in the past to treat diseases such as polio, measles, and mumps, in the 1918 flu epidemic, and in previous outbreaks of respiratory infections similar to covid-19.

The FDA’s decision came a day after the New York state governor, Andrew Cuomo, said that the state’s health department would begin to treat critically ill patients with convalescent plasma. Officials said they would recruit patients who have recovered from covid-19, probably from the New York City suburb where the state’s outbreak began, NBC News reported.

Plasma from people who have recovered from covid-19 may contain antibodies and might be effective against the infection, the FDA said. Convalescent plasma has been studied in outbreaks of other respiratory infections, such as H1N1 influenza, SARS, and MERS. “Although promising, it has not been shown to be effective in every disease studied” and therefore clinical trials were needed to see if it was useful in covid-19, the FDA cautioned.

The FDA told doctors...
FIVE MINUTES WITH . . .

Sarah Hallett

The chair of the BMA Junior Doctors Committee offers advice if you fear your protective equipment is not right

“We’ve heard that deliveries of personal protective equipment are being rolled out to hospitals and GP practices, but currently we know that many doctors on the front line still don’t have adequate access to proper PPE.

“The BMA has made strong calls for the government to resolve the matter immediately. We have concerns that without proper protection, some doctors could—as a direct consequence of their work—become ill, and that in some cases this could be fatal. If you’re concerned that you are being asked to see patients who have or are suspected of having covid-19, without the correct PPE for that situation, this should be raised immediately with management and with the BMA.

“Doctors in hospital have every right to request to be moved to a low risk area or to provide care that doesn’t expose them to becoming infected with covid-19 if adequate PPE isn’t available.

Face-to-face care

“GPs with patients who still need face-to-face care need to think carefully about the level of risk they are exposing themselves and other patients to if they give that care without protection. There are limits to the risks that doctors should expose themselves to and it isn’t fair to doctors, or their patients, to expect them to go beyond those limits.

“Another matter doctors have raised with us is their long shifts. Under the existing contract, trainees in England are entitled to food and drink when working overnight, as well as access to a space where they can eat or take a break, and to facilities where they can rest after their shift if they feel unable to travel home because of tiredness.

“As well as this, the BMA has backed calls for trusts to provide 24 hour access to food and to consider further arrangements for staff working longer shifts to ensure adequate rest space is available.”

Read more of Sarah Hallett’s advice to trainees at bmj.com

Abi Rimmer, The BMJ
Cite this as: BMJ 2020;368:m1287

DOCTORS IN HOSPITAL HAVE EVERY RIGHT TO REQUEST TO BE MOVED TO A LOW RISK AREA

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DOCTORS IN HOSPITAL HAVE EVERY RIGHT TO REQUEST TO BE MOVED TO A LOW RISK AREA
Doctors still at “considerable risk” from lack of PPE, BMA warns

The BMA has warned that doctors are still being put at “considerable risk” by shortages of protective equipment. The association said it was seeking urgent clarity on what risks hospital and general practice staff should have to take if they lack adequate PPE.

In the government’s daily briefing on 29 March Robert Jenrick, the secretary of state for housing, said, “We cannot and should not ask healthcare workers to be on the frontline without appropriate protective equipment.” He added that “millions” of masks, gloves, eye protectors, and gowns were being delivered.

But the BMA said it continued to receive reports of doctors not having access to adequate PPE. Rob Harwood (left), chair of the BMA’s Consultants Committee, said, “There are still doctors and other NHS staff who today, tomorrow, and in the coming week may face the daunting prospect of having to consider treating patients without adequate protection. [They] have every right to be concerned, knowing that a lack of adequate protection is not only dangerous, it may be fatal,” he said.

The BMA is also concerned at the geographical variation in PPE available to GPs. Richard Vautrey, chair of the General Practitioners Committee, said, “This situation cannot continue. Practices need action, not more promises.”

Covid-19
UK doctors die after contracting virus
The UK reported its first cases of doctors who died after contracting covid-19 last week. Amged El-Hawrani (below), a 55 year old ENT consultant at University Hospitals of Derby and Burton, died on 29 March at Leicester Royal Infirmary. Adil El Tayar, 63, an organ transplant specialist, died on 25 March at West Middlesex University Hospital in London. Both were confirmed as having covid-19. In addition, Habib Zaidi, a GP in Essex, died in intensive care at Southend Hospital on 25 March while being treated for suspected coronavirus.

App to track spread of symptoms in UK
Nearly 700 000 people signed up in the first 24 hours of the launch of an app to help track the spread of coronavirus throughout the UK in real time and collect information on the range of self-reported symptoms and the characteristics of people most at risk. The Covid Symptom Tracker app (covid.joinzoe.com) allows users to make a daily report of any symptoms and is available free to UK citizens. The app was developed by UK researchers from King’s College, London; the NHS; and partner health and research institutions.

Experts query suggested number of infections
Experts criticised an unpublished modelling study that said that half the UK population might already have been infected with covid-19. They emphasised that, even if the modelling turned out to be correct, it would not change public health advice to reduce the spread of the virus. Researchers from the Nuffield Department of Medicine at the University of Oxford used mathematical modelling to estimate infection rates by fitting a “susceptible-infected-recovered” model of epidemics to the numbers of deaths and reported cases in the early stages of the epidemic in Italy and the UK.

Workforce
Temporary registration granted to 11 800 doctors
The GMC granted temporary registration to 11 856 doctors who had left the profession, to help the service deal with covid-19. The move, which followed an official request by the UK government, means that the doctors, who had given up their registration or licence to practise within the past three years, are now licensed to practise again in the UK. The GMC said that it was granting temporary registration only to doctors with a UK address, who were fully qualified and experienced, and who were of good standing with no outstanding complaints, sanctions, or conditions.

Students and FY1 trainees to be registered early
Final year medical students will be offered early provisional registration, and foundation year 1 doctors will get early full registration with the GMC, to help staffing levels during the covid-19 pandemic. A joint statement on 25 March from the UK health departments, the GMC, and UK education authorities said that final year medical students who were deemed by their medical school to have met the GMC’s outcomes for graduates could graduate early. Medical schools will work with the Medical Schools Council to accelerate assessing these competencies where possible.

Cardiac surgery
Hospital unit shortcomings are linked to 67 deaths
Significant shortcomings in the care given to patients undergoing heart surgery at St George’s Hospital in London had “probably, most likely or definitely” contributed to 67 deaths from April 2013 to December 2018, an independent panel concluded. NHS Improvement convened the panel of 12 assessors after the trust fell below national safety levels for heart surgery from April 2013 to March 2017. The review follows an investigation in 2018 by the former NHS England deputy medical director Mike Bewick (left), which found a “persistent toxic atmosphere” with surgeons “working in camps” and displaying “tribal-like activity.”
Maternity care
Guidelines for pregnant women are updated
The Royal College of Obstetricians and Gynaecologists and the Royal College of Midwives issued updated advice for pregnant women working in the NHS and other settings during the pandemic. It emphasises that pregnant women of any gestation should be allowed to choose whether to work in direct patient facing roles. It advises that women who are less than 28 weeks pregnant should practice social distancing but can choose to continue working in a patient facing role with necessary precautions. Women who are more than 28 weeks pregnant or with underlying health conditions are advised to stay at home.

Abortion
Law change so termination pills can be taken at home
The government has confirmed it will alter abortion laws in the wake of the covid-19 pandemic, to allow women to access medical terminations without attending a clinic. A Department of Health spokesman said, “Public safety and continued access to key services is our priority during this difficult period. We are updating our guidance so women who need an abortion up to 10 weeks and can’t access a clinic can use abortion pills at home. This will be on a temporary basis and must follow a telephone or e-consultation with a doctor.”

New regulations come into force in Northern Ireland
Abortion will be available on request in the first 12 weeks of pregnancy in Northern Ireland, under new laws that came into force on 31 March. The rules allow abortion up to 24 weeks if continuing the pregnancy would cause greater risk to the physical or mental health of the pregnant woman than a termination. Abortion will also be available with no gestational limit in cases of severe or fatal fetal anomalies or where the woman risks death or severe permanent injury.

Legal news
Avastin for wet AMD is legal, says appeal court
The Court of Appeal has ruled unanimously that a policy of offering bevacizumab (Avastin) off label to NHS patients with wet age related macular degeneration, as an alternative to the more expensive drugs ranibizumab (Lucentis) and aflibercept (Eylea), is lawful. In a major judgment with far reaching implications, the three judges rejected arguments by the drug companies Novartis and Bayer that the policy breached EU law on medicines and UK legislation.

Judge: release dead man’s sperm record to brother
Andrew McFarlane, president of the High Court’s family division, ordered an unnamed fertility clinic to hand over records about its use of a dead patient’s sperm to the man’s brother. McFarlane ruled the clinic must release records relating to the storage and use of the patient’s sperm and any embryos created using his sperm.

PPE
A crowdfunding page set up by UK doctors to raise money to purchase personal protective equipment raised almost £1m (as of 30 March). Among those donating was the actor James McAvoy, who pledged £275K

Cite this as: BMJ 2020;369:m1288

SIXTY SECONDS ON…
NIGHTINGALE'S

NOT THE LARK?
Ha, very clever, but this is no time to quote Shakespeare.

SO, THE NURSE THEN?
No, we’re not talking about the Lady with the Lamp either. We’re talking about hospitals that are opening for patients with coronavirus.

NEW HOSPITALS?
Well, three temporary hospitals. The first Nightingale Hospital announced will be based at the ExCeL conference centre in London, a venue previously famous for hosting the Discover Dogs event.

AND THE OTHER TWO?
One will be based at the Manchester Central Convention Complex, which was to hold the UK’s largest gin festival, and the other will be based at the NEC in Birmingham, which recently hosted Crufts.

OH . . .
Don’t worry, I’m sure they’ll clean up the dog hair. Initially all three hospitals will provide up to 500 beds but have capacity to expand, with the London centre able to hold several thousand beds if required.

LIKE FIELD HOSPITALS?
Exactly. In fact, military planners and engineers have been involved in their development. Also, some military medics will be on hand to care for patients at the Nightingale hospitals alongside NHS colleagues from across the health service.

IS ANYONE ELSE HELPING OUT?
St John Ambulance are supplying hundreds of volunteers to help staff at the first Nightingale hospital in London.

AND . . .?
Yes, you may have heard that the NHS has also enlisted the help of furloughed easyJet and Virgin Atlantic (left) cabin crew. NHS England said that many airline staff were first aid trained as well as being security cleared. Those who volunteer will get training and play a support role—changing beds and performing other non-clinical tasks.

Abi Rimmer, The BMJ
Cite this as: BMJ 2020;368:m1290
With no current specific treatment for covid-19, the race is on to develop or repurpose drugs to help end the epidemic. The World Health Organization has now launched the Solidarity trial to investigate four potential treatments: remdesivir; chloroquine/hydroxychloroquine; lopinavir and ritonavir; and lopinavir and ritonavir plus interferon-β. The trial will not be double blind, as WHO said it needed to find a balance between gold standard practice and speed, but it will include thousands of patients from several countries. These are not, however, the only treatments being considered for covid-19. Here is a breakdown of the drugs that have been suggested so far.

**Chloroquine**

This is the drug that US president Donald Trump has declared “very powerful” with “very, very encouraging early results.” After a request from the US government, a pharmaceutical company, Teva, has agreed to donate more than six million doses of hydroxychloroquine sulfate tablets—a less toxic metabolite of chloroquine—to hospitals. Chloroquine is approved to treat malaria and rheumatoid arthritis. While it has previously been tested in vitro against a number of viruses, including SARS, and found to inhibit growth, no benefit has been seen in animal models. In a limited way, the drug has been tested against SARS-CoV-2—the virus that is the cause of covid-19—and has reportedly been found “highly effective,” although the evidence is still limited, with much of the data unpublished.

**Controlled trials**

Andrew Preston, reader in microbial pathogenesis at the University of Bath, said that while the early results are “promising” they have “yet to be fully scrutinised, and, of course, it is essential to conduct other, larger controlled trials to determine accurately the effectiveness of chloroquine as a treatment for covid-19. But in among the oppressive darkness of the current situation, any glimmer of hope is very welcome.”

Robin May, professor of infectious disease at the University of Birmingham, said although the mode of action against covid-19 has not been established, there are three different ways chloroquine—which acts to neutralise acids—could potentially work.

“Many viruses enter host cells through a process called endocytosis. This means that the virus is initially taken up into an intracellular ‘compartment’ which is typically acidic. Chloroquine would alter the acidity of this compartment, which can interfere with the ability of viruses to escape into the host cell and start replicating.

“Another possibility is that chloroquine may alter the ability of the virus to bind to the outside of a host cell in the first place, which is an essential first step for entry. Lastly, chloroquine has subtle effects on a wide variety of immune cells. For this reason, the drug is sometimes used in autoimmune conditions like lupus or rheumatoid arthritis. It may be that one of these effects helps stimulate the body’s ability to fight off covid-19.”

May added that as chloroquine has a “long history of clinical use, the safety profile is well established, and it is cheap and relatively easy to manufacture, so it would—theoretically—be fairly

**FAVIPIRAVIR (AVIGAN)**

This antiviral drug, manufactured by the Japanese pharmaceutical company Fujifilm Toyama Chemical, gained a lot of media attention after a Chinese official told reporters that studies had found it to be ‘clearly effective’ in treating covid-19. In reality, researchers from Wuhan, China, reported that the drug was “preferred” over the antiviral Arbidol for patients with covid-19 pneumonia, but not the most severe cases. This was because they found that the ‘time of fever reduction and cough relief in the favipiravir group was significantly shorter than that in the Arbidol group (both P<0.001), but there was no statistical difference observed of auxiliary oxygen therapy or noninvasive mechanical ventilation rate (both P>0.05).”

**CHLOROQUINE**

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easy to accelerate into clinical trials and, if successful, eventually into treatment.”

However, coordinating editor of the Cochrane Infectious Diseases Group, Paul Garner, from the Liverpool School of Tropical Medicine, warned there is “absolutely no evidence that chloroquine is effective in people infected with coronavirus” and said it should “not be given outside the context of a randomised controlled trial.”

He said, “This is a new infection; chloroquine could even do harm. We have to have the trials to assess this.”

Elisabeth Mahase, The BMJ
Cite this as: BMJ 2020;368:m1252

TOCILIZUMAB (ACTEMRA)

Tocilizumab is a monoclonal antibody that blocks the IL-6 signalling pathway and is used to treat rheumatoid arthritis. Currently, there is limited evidence on the safety or efficacy of the drug in clinical treatment of covid-19, although it is currently being investigated by the FDA through a double blind, randomised phase III clinical trial as a treatment for severe covid-19 pneumonia, in combination with standard care.

INTERFERON 1A (SNG001)

SNG001 is an inhaled formulation of a drug called interferon—a molecule that forms part of the lung’s own defence mechanism to fight off viruses. It has been tested in phase II trials for asthma patients and was found to lead to improvements in lung function. In covid-19, the theory has been raised that SNG001 could work by increasing the production of INF—thought to be suppressed by coronaviruses—to prevent or decrease symptoms of severe respiratory illness, such as pneumonia.

In the UK, pharmaceutical company Synairgen has been given expedited approval from the Medicines and Healthcare Products Regulatory Agency and Health Research Authority to test the drug for patients with covid-19 in a clinical trial.

Ian Hall, professor of molecular medicine at the University of Nottingham, said, “The idea behind the trial is that by giving more of this molecule to the lung it could help reduce the severity of infection with covid-19, especially in those people who have reduced immune responses to the virus. If the trial shows that interferon beta is a useful treatment for covid-19, it would provide a way to reduce the severity of disease and potentially reduce death rates.”
Teams began work last weekend to set up the new Nightingale Hospital London at the ExCel conference centre in Docklands. Military personnel were involved in the planning stages of the project to establish the hospital and are continuing to support NHS England by providing infrastructure, logistics, and project management advice. The hospital has been established to provide support for thousands of patients with covid-19, and the conference centre has been refitted to take hundreds of beds with oxygen and ventilators.

Two further NHS Nightingale hospitals will also open later this month. A hospital based at the National Exhibition Centre in Birmingham will open with up to 500 beds and will be equipped to increase capacity to up to 2000 beds if needed. A hospital based at the Manchester Central Complex will provide up to 500 beds but could expand further to 1000 beds for patients across northwest England.

In the US, one of several temporary hospitals is being built in Central Park, New York, to support the city’s hospitals. It has been commissioned by the Mount Sinai hospital system with 68 beds.

Tom Moberly, The BMJ

Cite this as: BMJ 2020;369:m129


**Editorial**

**NSAIDs and the coronavirus**

Extra risk for patients is plausible on the current balance of evidence

Emerging evidence suggests that the most serious complications of covid-19 are sepsis and cardiovascular or respiratory complications. They occur predominantly in elderly people and those with underlying health conditions. Does use of non-steroidal anti-inflammatory drugs (NSAIDs) increase these risks? We don’t know for certain, but additional risks are plausible on the current balance of evidence.

**Evidence of harm**

In observational studies, long term use of NSAIDs such as ibuprofen, naproxen, and diclofenac has been associated with higher rates of cardiovascular outcomes such as myocardial infarction, heart failure, and stroke—albeit with ongoing debate about residual confounding. Acute respiratory tract infections are already associated with increased risk of stroke and myocardial infarction, and short term use of NSAIDs during the illness is associated with further increases in risk. NSAIDs cause nephrotoxicity, which is more likely among vulnerable patient groups and is exacerbated by fever and dehydration.

A recent review of case-control studies suggests that NSAIDs are associated with higher rates of complications after respiratory tract infections, including complicated pneumonia, pleural effusions, prolonged illness, peritonsillar abscess, dissemination of infection to more than one site, or suppuration. The review’s authors say the most serious complications of covid-19 are sepsis and cardiovascular or respiratory complications. They occur predominantly in elderly people and those with underlying health conditions. Does use of non-steroidal anti-inflammatory drugs (NSAIDs) increase these risks? We don’t know for certain, but additional risks are plausible on the current balance of evidence.

**Reasonable evidence exists of a link between NSAIDs and both respiratory and cardiovascular adverse effects in several settings**

Case-control evidence is limited by confounding by indication. But these associations persist even in studies that control for this kind of confounding. What about trial evidence in primary care settings? A large trial (n=889) randomised patients presenting with respiratory tract infections to advice to take paracetamol, ibuprofen, or both. Re-consultations with new or unresolved symptoms or complications were documented in 12% of the paracetamol group and 20% of the ibuprofen group (adjusted risk ratio 1.67, 95% confidence interval 1.12 to 2.38). The 11 complications recorded in the ibuprofen group were quinsy, sinusitis (n=3), meningitis, pneumonia, otitis media (n=3), progression or non-resolution of otitis media (n=2).

A second randomised trial in 3044 primary care patients gave half access to a website advising on self-management of respiratory tract infections, including advice to use NSAIDs. Multivariate analyses suggested that among participants who developed respiratory tract infections, those with access to the website had more prolonged illness than controls without access—namely, days of illness rated moderately bad or worse (difference 0.52 days; 95% CI 0.06 to 0.97, P=0.026). The effect could not be explained by reporting bias or confounding by indication and was attenuated after the authors controlled for use of the ibuprofen web pages.

This pragmatic trial evidence supports observational data suggesting that NSAIDs may cause more prolonged illness or complications when taken during respiratory tract infections.

**Applicable to covid-19?**

Clearly, the big unknown is whether any of this evidence applies in the covid-19 epidemic. The evidence to date is not strong enough to support advising against all use of NSAIDs: the primary care trials above tested more regular dosing during respiratory infections, so we have little evidence about intermittent use, and it seems likely that intermittent or occasional use could help patients with covid-19, for example, to relieve night time symptoms and aid sleep if paracetamol is inadequate, given the importance of sleep in immune defence.

People taking low dose aspirin for secondary prevention of cardiovascular disease should continue their treatment. Aspirin has anti-inflammatory effects only at much higher doses (eg, 1-4 g a day).

In summary, reasonable evidence exists of a link between NSAIDs and both respiratory and cardiovascular adverse effects in several settings, but so far we have no evidence relating specifically to people with covid-19. Pending further research, a pragmatic and cautionary approach would be to inform the public to avoid these plausible harms: regular NSAID use should probably not be recommended as the first line option for managing the symptoms of covid-19.

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Find the full version with references at http://dx.doi.org/10.1136/bmj.m1185

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Controlling the spread of covid-19
Testing and tracing must resume urgently in the UK

On 24 February the World Health Organization recommended countries outside China with imported cases or outbreaks “prioritize active, exhaustive case finding and immediate testing and isolation, painstaking contact tracing and rigorous quarantine of close contacts.”

On 22 March—when there were 5683 confirmed UK cases—Michael Ryan, executive director of the WHO health emergencies programme, repeated the message on the BBC.

This is entirely unexceptional. Case finding, contact tracing and testing, and strict quarantine are the classic tools in public health to control infectious diseases. WHO says they have been painstakingly adopted in China. In Singapore, Vietnam, and South Korea meticulous contact tracing combined with clinical observation plus testing were vital in containing the disease. This combined with strong measures to enforce isolation for travellers returning from high incidence areas obviated the need for a national lockdown and closure of all schools in Taiwan and Singapore.

Cases underestimated
The mathematical model used by the UK government clearly shows that rigorous contact tracing and case finding are effective. Contact tracing started in the UK but stopped early in the epidemic. This, coupled with the lack of surveillance and testing of those contacting primary care, suggests the number of confirmed cases is an underestimate.

The reasons why tracing was stopped, against WHO recommendations, have not been published. It seems to be connected to a shift from “contain” to “delay” in the government’s action plan, when contact tracing was replaced rather than supplemented with other control measures.

One reason seems to be a lack of tests and testing facilities. However, testing is a support not a substitute for tracing or medical observation. Current tests for the virus require careful validation and have low sensitivity, resulting in many false negative results, especially in the pre-symptomatic phase when viral load is low.

Another factor is the decision to treat the situation as a single national epidemic rather than scores of local outbreaks each at different stages, needing to be tackled locally. National figures conceal huge regional variation. In the H1N1 flu pandemic in 2009, this same approach “seriously impaired the ability of local agencies to respond in a flexible, timely and pragmatic way to the rapidly emerging situation.”

Matters have worsened since 2009. Central control in England was entrenched by the 2012 Health and Social Care Act, which created Public Health England (PHE) to protect the health of the public in England and gave local authorities the duty to improve the health of their local populations. PHE is legally in charge of communicable disease control and sits outside the NHS and local government. Directors of public health in local authorities have little scope to proactively taking local control.

These changes are exacerbated by the decimation of public health and laboratory facilities for testing. The decrease in numbers of consultants in communicable disease control and community control teams, together with swinging local authority cuts since 2010, have reduced the chances of a strong local response. Local pathology and virology services have been centralised and partly privatised, leading to a fragmented mix of for-profit and public laboratories and serious staff shortages.

Sidelined
The scientific evidence has been dominated by behavioural science and mathematical modelling, with communicable disease control and public health sidelined. This leads to a lack of scientific challenge, as in the 2009 flu epidemic.

So what now? The WHO mantra of ‘Trace, Test and Treat’ must be followed. It is not too late. A second and third wave of the epidemic is likely. Contact tracing must recommence. This means immediately instituting a massive centrally coordinated, locally based programme of case finding, tracing, clinical observation, and testing. It requires large teams of people on the ground, including volunteers, using tried and tested methods updated with social media and mobile phones and adapting the manuals and guidance for international use published by China.

The structure and capacity of our depleted healthcare system are now largely driving the response to this epidemic. They will continue to do so until services that support local communicable disease control are rebuilt and reintegrated.

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How coronavirus will change the face of general practice forever

GPs say the pandemic will bring about lasting change in how they work and care for patients. Jacqui Thornton reports

At practice level, primary care has altered dramatically in the past few weeks, with staff—clinical and administrative—adapting to new ways of working.

At some practices, entrance doors are locked shut and prescriptions given out from a window. Red tape, appraisals, and routine work has been relaxed, and home visits hugely reduced. At the end of phone and video consultations, many patients are saying “thank you and good luck.”

In one practice in Hampshire, where nearly half the reception and admin staff are off work as a precaution, senior partner Alex Fitzgerald-Barron said they are as ready as possible. “On the coal face, my whole team has given 110%: working hours have gone out the window, clinicians come in or video call on their day off, our local practices have been collaborating almost daily, and, for the stuff we can control, we feel as prepared as we can be,” he told The BMJ.

Trish Greenhalgh, professor of primary care health sciences, who co-authored an article advising GPs on remote assessment for covid-19 (see page 32), said that GPs are working flat out. “They’re worried about how to manage patients and also whether the personal protection equipment they’ve got is adequate. They are shifting to phone and video at an unprecedented pace,” she said.

It’s a confusing situation; some practices are fired up, others are more anxious about what might happen in the coming weeks. For single-handed surgeries, and those that were already struggling before the outbreak, there is concern about how they’re coping in this new world.

Guidance: too little or too much?

In early March, Nikita Kanani, NHS England’s medical director for primary care, wrote to GPs recommending telephone or video triage to avoid patients coming into surgeries. The following week, Martin Marshall, chair of the Royal College of General Practitioners Council and a GP in Newham, east London, said that while there was lots of information on covid-19, it was generic and didn’t tackle the specific needs of primary care. “GPs are becoming increasingly desperate for the right type of information,” he wrote in a blog. The RCGP published its own guidance.

A week later Public Health England published interim guidance for primary care, and three days later NHS England sent out further guidance on at risk patients. The RCGP is now working with NHS England and accepts the body had been “inundated” with requests for further information, making it hard to respond adequately.

Rachel Hopkins, a GP based in north London, told The BMJ that she is frustrated with the lack of clear central direction, or a clinical care model, from clinical commissioning groups. In this void, primary care networks have been left to make their own decisions. Others said they would like more granular detail in guidance and more local nuance as to whether they are a “hot spot” as well as when to use PPE. One GP told The BMJ about time consuming daily emails packed with complex protocols. But others said the situation is so unprecedented it is unfair to criticise.

Local decision making on hot hubs

In the meantime, PCNs appear to be coming into their own in the crisis, collaborating well and sharing workforce. Localised decision making is evident when it comes to the establishment of “hot hubs” (sometimes called red zones)—dedicated clinics to care for people with confirmed or suspected covid-19 infection who also need treatment for other medical problems. In this way, they will be separated from non-covid-19 patients in “cold hubs” or green zones.

In Gloucestershire, three PCNs covering 20 surgeries are taking over a dental surgery run by staff working on a rota, leaving normal surgeries as green zones. Richard Probert, clinical director of Berkeley Vale PCN, says there was a clear steer to do this from the CCG.

It began testing the model on 27 March with patients being...
assessed in their cars underneath a marquee by a GP in full PPE before going into the hub for treatment, if necessary. It runs a four hour session during normal GP opening hours Monday to Friday, with a GP, nurse, and admin staff.

Mark Porter, who works in a practice in the south of the county, describes it as “an initiative by GPs for GPs and their patients,” driven by the PCNs. “We don’t know how the service is going to develop or what the demand’s going to be like, whether we need to open longer, whether it needs to go seven days a week. But we’re up and running and ready.”

Urban challenges and spare capacity

In the capital, it’s a different story, with little clarity from CCGs on how to clinically assess patients. In south London, one surgery has set up a single “hot room” within the practice which is decontaminated after use.

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The BMJ

Differentiation between hot and cold hubs is going to become less and less relevant as time goes on

Martin Marshall, RCGP

With covid-19, many NHS GPs who were previously sceptical about video consultations have been turned around. GP Mark Porter told The BMJ he was “gobsmacked” at how well it has worked.

One of the companies providing the platform to enable this is AccuRx, a health tech startup that already has an SMS tool used by GPs, which is integrated into EMIS and other GP record systems.

When GPs were told two weeks ago that face-to-face appointments needed to be replaced, the company decided to build a new video consultation service that weekend. The solution was tested on the Monday morning, then enabled for 3600 practices across the country that afternoon. Since then, the number of practices using it has gone from 3600 to 5700—over 80% of practices in the country.

South London GP Pete Deveson said he was sceptical at first but it has been “amazingly helpful.”

AccuRx is now encouraging its use in secondary care. Early adopter Conor Byrne, a consultant nephrologist at Barts Health NHS Trust, says it has been helpful to check on transplantation patients in the high risk category. “They are terrified; to see they are breathing okay is extremely reassuring.”

The redemption of video consultations

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**Are UK doctors getting sufficient protection against the virus?**

The BMA has warned that doctors are at risk of serious illness or even death because of a lack of proper personal protective equipment (PPE). To determine the vulnerability of healthcare workers on the front line, we look at what the latest guidelines recommend and the evidence behind the use of different grades of equipment, from surgical face masks to full PPE. Are doctors and other healthcare workers being equipped with the protection the evidence indicates they need?

What are UK guidelines on PPE and how do they differ from the World Health Organization?

Guidelines from Public Health England recommend that healthcare workers caring for patients with suspected or confirmed covid-19 should “assess the infectious risk…and wear the appropriate personal protective equipment to minimise that risk.”

Evidence indicates that aerosol transmission (where the virus is suspended in air) is not driving the pandemic, although certain procedures, such as intubation, risk creating aerosols. Instead, the virus is most commonly transmitted in droplet form, when someone sneezes and coughs possibly infecting someone nearby or when droplets fall on hard surfaces and can survive for hours. Different protection is recommended by the PHE for different risk levels:

- For work in areas where patients are waiting, but no patient contact: fluid resistant surgical face mask
- For close patient contact within 1 m (hospital or primary care): surgical face mask, plastic apron, disposable gloves, eye protection (if risk of contamination of eyes by splashes or droplets)
- When carrying out aerosol generating procedures (AGPs): FFP3 respirator, long sleeved disposable gown, gloves, disposable eye protection
- In high risk units where AGPs are being carried out: FFP3 respirator, plastic apron, gloves, disposable eye protection.

Guidance from the World Health Organization (WHO) is similar, but it says that healthcare workers providing “direct care” to patients with covid-19 should wear a gown, where Public Health England specifies an apron, and should wear eye protection (goggles or face shield), where Public Health England says that this is only needed “if risk of contamination of eyes.”

Public Health England has produced a list of medical procedures, including intubation and extubation, bronchoscopy, and tracheotomy, which are “considered to be potentially infectious” AGPs. The list is:

- Intubation, extubation, and related procedures, such as manual ventilation and open suctioning of the respiratory tract
- Tracheotomy/tracheostomy procedures
- Bronchoscopy and upper ear, nose, and throat airway procedures that involve suctioning
- Upper gastrointestinal endoscopy where there is open suctioning of the upper respiratory tract

What is the guidance from specialist groups?

On Friday 27 March, the Faculty of Intensive Care Medicine, Intensive Care Society, Association of Anaesthetists, and Royal College of Anaesthetists in the UK issued joint guidance. The organisations said that this represented “our interpretation of PHE’s current guidance,” given that guidance “has been interpreted in very different ways, some of which can lead to the unnecessary use of PPE and consequent shortages.”

The joint guidance differs from PHE’s guidance as it recommends wearing some form of protection while treating all patients (within 2 m), even those in whom covid-19 is not suspected or confirmed. It says that clinicians should wear gloves and consider wearing a surgical mask, eye protection, and waterproof apron.

In addition, where covid-19 is known or suspected, the joint guidance says:

- People working in clinical areas more than 2 m from the patient should consider gloves, waterproof apron, and surgical mask
- People in close contact with patients (for procedures including nerve blocks, local anaesthesia, ward rounds, and outpatient appointments) should wear gloves, waterproof apron, surgical mask, and consider eye protection
- People working in intensive care units and operating theatres, when carrying out AGPs and for 20 minutes afterwards, should wear gloves, long sleeved fluid resistant gown, fit tested FFP3 mask, eye protection, and consider a second pair of gloves.

The joint guidance divides into “droplet protection” for close patient contact and “airborne protection” for clinicians exposed to AGPs. For protection against droplet infection, they recommend gloves, waterproof apron, fluid resistant surgical mask, and to consider eye protection. For airborne protection, they recommend gloves, fluid resistant, long sleeved gown, fit tested and checked FFP3 mask, eye protection, and to consider a second pair of gloves.

The Royal College of Surgeons of Edinburgh, Royal College of Surgeons of
England, Royal College of Physicians and Surgeons of Glasgow, and Royal College of Surgeons in Ireland have said in a statement: “When covid-19 status is positive or uncertain, international experience recommends full personal protective equipment (PPE) be used for laparotomy, but shortages prevent this in most areas, and stratification is necessitated with lesser measures for low risk cases. Full PPE is advised for positive or suspected patients and includes double layers of disposable gloves and gown, eye protection, and FFP3 mask.”

In the US, the American Society of Anesthesiologists, Anesthesia Patient Safety Foundation, American Academy of Anesthesiologist Assistants, and American Association of Nurse Anesthetists issued a joint statement stating: “We recommend as optimal practice that all anesthesia professionals should utilize PPE appropriate for aerosol generating procedures for all patients [whether suspected or confirmed covid-19 or not] when working near the airway.”

They say this is because “identification of who is covid positive or negative with certainty is not possible in the setting of clinical care.” They say that people carrying out AGPs should wear: “eye protection (goggles or a disposable face shield that covers the front and sides of the face), a gown, and gloves, in addition to airway protection with N95 masks [equivalent to FFP3] or PAPRs [powered air purifying respirators].”

Is there enough PPE available across the NHS?

Widespread reports say that the right PPE is not available in sufficient quantities to all the healthcare sectors that require it. The BMA warned on 25 March that there was “growing evidence that thousands of GPs and hospital staff are still not being provided with the kit they need to properly protect themselves and their patients.”

Chaand Nagpaul, BMA chair of council, said: “We are told that lorries are shipping hundreds of boxes of supplies of PPE to GPs and to hospitals, but that isn’t the reality for thousands of our members. The type of PPE being supplied is not in keeping with WHO recommendations. GPs in many parts of England have been told to go and buy their own stocks, only to find none is available.”

The chair of the Royal College of General Practitioners wrote to the health secretary Matt Hancock last week seeking “urgent clarification” on PPE and guidance on its use, especially aprons and eye protection, given that many patients with covid-19 might be asymptomatic. “It is therefore vital that urgent clarity is provided as to whether GPs should begin wearing PPE for all face-to-face patient consultations,” he wrote.

Eye protection seems to be a particular problem. The Health Care Supplies Association took to Twitter to appeal for help from DIY stores for NHS staff. On Monday 30 March, social care minister Helen Whately told BBC Radio 4’s Today programme that 117 million pieces of equipment had been delivered to hospitals, primary care, hospices, and care homes over the previous two weeks. But hospitals and GP surgeries continued to report shortages.

Some hospitals made direct appeals to their communities. University Hospitals Warwickshire and Coventry reportedly put out an urgent request on a local business social media website on Saturday 28 March asking for businesses that might be able to supply polycarbonate face shields and plastic goggles, for use by nurses treating patients with covid-19.

A group of NHS doctors went further, setting up a crowdfunding account to raise money to buy PPE to be donated to NHS trusts. By Monday morning, the appeal had raised £854 256.

What’s the evidence on PPE’s effectiveness in various settings?

An updated Cochrane review, posted on MedRxiv and under review at The BMJ this week, finds little good evidence of the effectiveness of face masks in reducing the spread of respiratory viruses, but it recommends that healthcare workers still wear surgical masks in clinical settings. It found no evidence of any difference between surgical masks and N95 respirators. The University of Oxford’s Centre for Evidence Based Medicine is producing a series of rapid evidence reviews looking at this. Their first review considered the effectiveness of different types of masks.

The review found that “Most real world research comparing standard face masks with respiratory masks has been in the context of influenza or other relatively benign respiratory conditions.” There are no published trials comparing standard face masks with respirator masks in covid-19.

It said that evidence from a recent (2020) meta-analysis of the effectiveness of N95 respirators versus surgical masks against influenza included six randomised controlled trials and 9171 participants. It found no differences in efficacy in preventing flu, flu-like illness, or respiratory infection. Respirators “appeared to protect against bacterial colonisation,” however.

Based on this finding, the review concludes that the trials reviewed “provide cautious support for the use of standard surgical masks in non-AGPs, though the empirical studies underpinning this conclusion were not in a covid-19 population, and only one was in a community setting.” They plan to publish more evidence on other types of PPE within days, including a review of what should be considered AGPs and which PPE is recommended for primary care.

People perceive that the UK is providing less rigorous guidance on PPE than China. Is this true?

Chinese physicians have made available a handbook of covid-19 prevention and treatment, based on their experience. They identify three levels of protection. All staff at healthcare facilities, they say, must wear surgical masks as standard.

• Level 1 (pre-examination triage waiting rooms, general outpatient department): disposable surgical cap, disposable surgical mask, work uniform, disposable latex gloves
• Level 2 (fever outpatient department, isolation ward area, imaging examination of suspected or confirmed patients, cleaning of surgical instruments used with suspected or confirmed patients); as above, with N95 (FFP3 equivalent) mask, goggles, disposable medical protective uniform
• Level 3 (when performing AGPs on suspected or confirmed patients or other procedures where patients may spray or splash respiratory secretions or bodily fluids, including surgery and autopsy); as above, with possible addition of full face respiratory protective devices or powered air purifying respirator.

It is difficult to know whether these precautions were adhered to in China. In the early stages of the pandemic at least, Chinese doctors might not have had access to such equipment.

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Can France’s ethical support units help doctors make challenging decisions?

Thirteen regional hubs have been set up across the country to help medical professionals make difficult choices about which patients with covid-19 to treat in intensive care. Sophie Arie reports

With more than 2600 deaths and 40000 cases of covid-19 recorded in the country, hospitals in the Ile de France region surrounding Paris are preparing for a tipping point this week, when their 2000 intensive care unit beds are expected to be full.

“We will have to make terrible choices about who will or will not be admitted to ICUs,” Bertrand Guidet, head of the ICU at Saint Antoine Hospital in Paris, told The BMJ. “We have never had to make such difficult decisions.”

Doctors will have to make far more decisions than usual on whether to withdraw treatment from those patients who are too ill to benefit. But in addition, because of bed or ventilator shortages, doctors will increasingly have to choose one patient over another when both could benefit from treatment.

Each of France’s 13 health regions now have an “ethical support unit”—made up of experts in emergency medicine, geriatrics, palliative care, medical ethics, philosophy, and law, as well as representatives of patient groups—to support hospital staff, GPs, and the public as these decisions are made.

The units will also provide psychological support to medical professionals and will support the public and the state as they grapple with all sorts of ethical issues arising from the epidemic. Two psychological support units, contactable by telephone, are also being set up in each region to support medical workers as they work in crisis conditions that are widely being compared to wartime.

Triage guidance

University hospitals already have systems in place to support doctors’ decision making. The regional ethical support units will provide additional reassurance to those hospitals in complex cases. These units may well be the only source of a second opinion for smaller hospitals, GPs, patients, and their families.

ICU doctors seeking reassurance about a decision or, for example, GPs who disagree with a refusal by paramedics to transport a patient to hospital because of a lack of beds, will be able to call their regional unit, which will provide rapid advice to all involved.

Detailed recommendations on how to triage patients with covid-19 in an ethically acceptable way were issued to French doctors last week. Under the guidance, which Guidet helped to write, patients must be assessed on a combination of factors to decide which patients have the greatest chance of survival and the most life years to gain from surviving. These factors include:

- The patient’s wishes
- The patient’s baseline condition: age, frailty score (using the French clinical frailty score or GIR frailty score, the Katz index, and WHO’s performance index score if already known), nutritional status, and cognitive status
- The severity of the virus: respiratory failure and organ failure, measured using a SOFA [sequential organ failure assessment] score
- The potential life years to be gained, and
- The availability of beds and ventilators.

Depending on how each patient measures against others on the combined criteria, the patient should either be admitted to ICU, receive palliative care only, or be offered care that does not require intubation. If a patient is dying the guidance specifies that at least one relative should be allowed to be present, using suitable protective equipment.

One of the peculiarities of covid-19, says Guidet, is that many patients need 3-4 weeks of intensive care. The guidance advises that ICU patients should be reassessed every two days and that treatment should be withdrawn if they no longer meet the treatment criteria.

Appeals for clarity

In Paris, to try to maximise ICU capacity, hospitals are considering whether two patients could share a ventilator (a procedure already approved for use in New York) and whether tracheotomies could be carried out to help wean patients off ventilators when they are ready, says Guidet.

In Normandy, where hospitals have not yet reached full capacity, the ethical support unit currently provides more of a public communications role. It has responded to appeals from the public for clarity on issues such as how many relatives may attend births or visit newborns in maternity wards (currently set at one) and how many people may attend funerals (not more than 20). All regional units can report their findings on such issues to a national ethical support unit, which then announces national rules.

Gregoire Moutel, professor of medicine at Caen and Rouen University Hospital, who leads the Normandy ethical support unit, says, “One of our roles is to provide clarity and stop debate over why there is one rule in one part of the country and a different rule somewhere else.” Some of the unit’s decisions are given verbally—when they are urgent—and some others, such as the decisions on rules for maternity wards and funerals, are recorded in writing.

“We are here to help medical staff respond to the demands of the public and provide a space for public debate on these issues,” Moutel said. “This will help when it comes to managing the aftermath of this crisis.”

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The COVID-19 pandemic is likely to put healthcare professionals across the world in an unprecedented situation, having to make impossible decisions and work under extreme pressures. These decisions may include how to allocate scant resources to equally needy patients, how to balance their own physical and mental healthcare needs with those of patients, how to align their desire and duty to patients with those to family and friends, and how to provide care for all severely unwell patients with constrained or inadequate resources. This may cause some to experience moral injury or mental health problems.

**MORAL INJURY**

Moral injury, a term that originated in the military, can be defined as the psychological distress that results from actions, or the lack of them, which violate someone’s moral or ethical code. Unlike formal mental health conditions such as depression or post-traumatic stress disorder, moral injury is not a mental illness. But those who develop moral injuries are likely to experience negative thoughts about themselves or others (for example, “I am a terrible person” or “My bosses don’t care about people’s lives”) as well as intense feelings of shame, guilt, or disgust. These symptoms can contribute to the development of mental health difficulties, including depression, post-traumatic stress disorder, and even suicidal ideation.

Equally, some people who have to contend with significant challenges, moral or traumatic, experience a degree of post-traumatic growth, a term used to describe a bolstering of psychological resilience, esteem, outlook, and values after exposure to highly challenging situations. Whether someone develops a psychological injury or experiences psychological growth is likely to be influenced by the way that they are supported before, during, and after a challenging incident.

Moral injury has already been described in medical students, who report great difficulty coping with working in prehospital and emergency care, where they were exposed to trauma that they felt unprepared for. This may be similar to the unprecedented nature of the challenges healthcare staff are currently facing. In the UK, most NHS staff may have felt, with some justification, that with all its faults, the NHS gives the sickest people the greatest chance of recovery. As such, staff should and usually do feel that it is something to be proud of.

The huge current effort to ensure adequate staffing and resources may be successful, but it looks likely that during the COVID-19 outbreak many healthcare workers will encounter situations where they cannot say to a grieving relative, “We did all we could” but only, “We did our best with the staff and resources available, but it wasn’t enough.” That is the seed of a moral injury. Not all staff members will be adversely affected by the challenges ahead, but no one is invulnerable, and some healthcare workers will hurt, perhaps for a long time, unless we begin now to prepare and support our staff.

**KEY MESSAGES**

- Healthcare staff are at increased risk of moral injury and mental health problems when dealing with challenges of the COVID-19 pandemic.
- Healthcare managers need to proactively take steps to protect the mental wellbeing of staff.
- Managers must be frank about the situations staff are likely to face.
- Staff can be supported by reinforcing teams and providing regular contact to discuss decisions and check on wellbeing.
- Once the crisis begins to recede, staff must be actively monitored, supported, and, where necessary, provided with evidence-based treatments.

**Not being able to say to a grieving relative, “We did all we could” is the seed of a moral injury**
Several potential mechanisms can help mitigate the negative mental health effects of the current situation. All healthcare workers need to be prepared for the moral dilemmas they are going to face during the covid-19 pandemic. We know that properly preparing staff for the situations both moral injury and burnout may affect staff make sense of the morally challenging decisions being made. This could be achieved by using discussions based on Schwarz rounds, which provide a forum for healthcare staff from all backgrounds to safely discuss the emotional and social challenges of caring for patients. The discussion should be led by team leaders and could be done remotely if needed.

Avoidance is a core symptom of trauma, so team leaders should reach out to staff who are just “too busy” or repeatedly “not available” to attend these discussions. Most people find that support from their colleagues and immediate line manager protects their mental health. Staff members who persistently avoid meetings or become overly distressed may require and welcome sensitive discussion and support from a suitably experienced person such as their team leader, trained peer supporter, or chaplain. If their distress is severe or persistent they should be actively supported or, for more serious cases, referred for professional mental health support. Single session psychological debriefing approaches should not be used as they may cause additional harm.

Routine support processes (such as peer support programmes) available to healthcare staff should include a briefing on moral injuries, as well as an awareness of other causes of mental ill health and what to look out for. Even the most resilient team members may become overwhelmed by situations that have personal relevance, such as providing care for someone who reminds them of a relative or a friend. Even staff members experienced in breaking bad news to relatives may be overcome by having to do this many times a day for weeks on end, especially if they feel guilty.

### Table: Potential for moral injury: analogous examples of events or actions in military settings and the covid-19 pandemic

<table>
<thead>
<tr>
<th>MILITARY EXAMPLES</th>
<th>EXPECTED HEALTHCARE EXAMPLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Following orders that were illegal, immoral, or against the Rules of Engagement or Geneva Convention</td>
<td>Following clinical decisions by others that the individual believes were unethical, immoral, or against guidance from registered professional bodies</td>
</tr>
<tr>
<td>Failing to report knowledge of a sexual assault or rape committed against yourself, a fellow service member, or civilians</td>
<td>Failing to report serious clinical incidents, near misses, or bullying of yourself, colleagues, or patients</td>
</tr>
<tr>
<td>Change in belief about the necessity or justification for treatment plans or protocols that have affected people’s lives</td>
<td>Change in belief about the necessity or justification for treatment plans or protocols that have affected people’s lives</td>
</tr>
<tr>
<td>Putting a colleague in serious danger because of own inexperience or indecision</td>
<td>Putting patients or colleagues in danger because of indecision inexperience, or working outside your normal competency</td>
</tr>
<tr>
<td>Returning home from deployment and hearing of the atrocities that occurred “on your watch”</td>
<td>Returning home from a shift and hearing of seriously worsening health outcomes in the facility in which you were working</td>
</tr>
<tr>
<td>Being told that you are unable to treat a seriously ill civilian (especially someone you perceive as vulnerable, such as a child) brought to the gates of your camp, who subsequently dies</td>
<td>Having to choose which of two equally sick patients is provided with specific care, one of whom does not survive, because of the non-availability of healthcare equipment</td>
</tr>
<tr>
<td>Giving orders during combat that result in the injury or death of a fellow service member or innocent civilians</td>
<td>Giving clinical orders or establishing protocols that result in the death of colleagues or patients</td>
</tr>
<tr>
<td>Using deadly force in combat and causing the harm or death of civilians, knowingly but without alternatives, or unintentionally</td>
<td>Responding acutely in medical emergency and causing the harm or death of patients, knowingly but without alternatives, or unintentionally</td>
</tr>
<tr>
<td>Feeling let down when the chain of command does not provide you with adequate reinforcements</td>
<td>Feeling let down because you are working with insufficient resources or staffing, especially when you perceive that this was avoidable</td>
</tr>
</tbody>
</table>

Even staff members experienced in breaking bad news to relatives may be overcome by having to do this many times a day for weeks on end, especially if they feel guilty.

Although there is a wealth of evidence that having a supportive supervisor protects your mental health, supervisors are human too. As such, more senior managers should keep an active eye on more junior ones and check how they are doing. If they show signs of presenteeism—that is, working less effectively because of poor mental health—this will directly affect the operational capability and health of all team members, and thus early identification and support are key.
AFTER CARE

Once the crisis is over, supervisors should ensure that time is made to reflect on and learn from the extraordinarily difficult experiences to create a meaningful rather than traumatic narrative.

NICE recommends “active monitoring” of staff to ensure that the minority who become unwell are identified and assisted to access evidence based care. Clinicians who provide care for moral injuries and associated mental illness should also be aware of the potential to avoid speaking about guilt and shame and focus on other stressors during therapy. This therapeutic avoidance can lead to poorer outcomes.

These are extraordinary times. There is a pressing need to ensure that the tasks ahead do not cause long lasting damage to healthcare staff. They will be the heroes of the day, but we will need them for tomorrow.

For hundreds of years, the military have recognised the critical role of junior leaders in maintaining the will and capability of troops to continue to fight even in the most arduous of conditions. Similarly, healthcare managers in supervisory positions must now acknowledge the challenge staff face and minimise the psychological risk inherent in dealing with difficult dilemmas, and those in charge of resources must provide them with the opportunity to do so.

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Healthcare staff will be the heroes of the day, but we will need them for tomorrow.
Testing must be progressive
Access to testing cannot be left to the free market, Joseph Freer, a National Institute for Health Research academic clinical fellow, argues in a BMJ Opinion piece. NHS workers need prioritisation for testing, and the different testing approaches available should be used in a way that detects infection efficiently and protects the most vulnerable, he says.

Impact of Europe’s migration policies
Europe’s migrant containment policies threaten the response to covid-19, and policy makers must include migrant camps in their national plans, global health academic Sally Hargreaves and colleagues say in an editorial. They warn that a failure to respect the needs of vulnerable groups will seriously undermine response efforts.

Vulnerable groups
The risks of covid-19 may disproportionately affect vulnerable populations, and control measures must be equitable and inclusive, US internist Zackary D Berger and co-authors say in an editorial. They warn that a failure to respect the needs of vulnerable groups will seriously undermine response efforts.

Tailoring support to match need
In a BMJ Opinion piece, acute physician and clinical academic Louella Vaughan says that the response to the pandemic cannot be one size fits all. Thoughtful tailoring of additional support to allow clinical teams to continue to meet the needs of their local communities may be the best response for the most vulnerable people.

Redeployed to the front line
Kirupakaran Arun, a trainee ophthalmologist who has been redeployed to the frontline of covid-19 preparation, shares his experiences in a BMJ Opinion article. He says he hopes the article will allay the fears of others who are in a similar position.

World’s largest refugee camp
Nearly a million refugees live in overcrowded conditions in the camps of south Bangladesh. In a feature, journalist and prize winning author Gaia Vince reports on the growing fears of an imminent, catastrophic outbreak of covid-19.

Compassionate leadership
Professor of work and organisational psychology Michael West joins The BMJ’s Cat Chatfield and Abi Rimmer in a podcast to talk about what compassionate leadership looks like in the time of covid-19.

What do trainees need to know?
In a Careers article, Sarah Hallett (right), chair of the BMA Junior Doctors Committee, answers questions on how the pandemic might affect trainees. She discusses redeployment, the long term impact on training, and what you can do if you don’t think you have the right protective equipment.

The response in South Asia
Covid-19 has exposed gaps in public health preparedness in South Asia, Zulfiqar Bhutta, chair of the department of paediatrics and child health at the Aga Khan University in Pakistan, and colleagues argue in their editorial. Countries in the region must now move rapidly and in unison to avoid a public health catastrophe on the scale of the 1918-19 influenza epidemic, they say.

Older people’s needs
Peter Lloyd-Sherlock, professor of social policy and international development, and colleagues say in this editorial that in low and middle income countries older people will bear the brunt of the impact of covid-19. They argue that a global expert group on older people might be useful.

Running a free clinic
For the free clinics in the US that look after a population nearly invisible to the healthcare system, covid-19 has presented some tough decisions. In a BMJ Opinion piece, US medical student Jason Gomez describes what it has meant for the clinic in which he volunteers.

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All content from across the BMJ’s journals and learning resources that relates to covid-19 is freely available and collected on our covid-19 page at bmj.com/coronavirus