comment

"Fast food and fizzy drinks feature among our coping strategies" **DAVID OLIVER**
"If people are unsure of the rules, we can't expect them to comply" **HELEN SALISBURY**
PLUS Protecting non-covid cancer hubs; pandemic in secure psychiatric units

WOUNDED HEALER Clare Gerada

Some good must come out of covid-19

Unlike other recent epidemics (HIV/AIDS, SARS, Ebola), which were mainly contained in specific countries or patient groups, the impact of covid-19 is affecting the whole world. For better or worse, we're all experiencing enormous changes to our personal, social, and professional lives. My life as a doctor—like everyone's—has changed beyond belief, maybe forever. Some of these changes are positive, such as reduced commuting time, using digital technologies to consult with patients, and learning new skills or different technologies. The negative changes include, especially, the loss of personal contact with peers and patients.

I have concerns about the impact of covid-19 on doctors' mental health, and predictions from previous epidemics and pandemics show that it may be profound. Nevertheless, as we emerge from the first acute stage, I'm impressed by how many have shown remarkable resilience in the face of tremendous upheaval. Doctors (alongside the rest of the population) have rapidly adapted to their new ways of working, and some, especially those who have structured posts on the "front line," report feeling re-energised, in control, and connected to their colleagues in ways that were largely absent pre-covid.

Hospitals have re-created doctors' messes or welfare rooms, where staff can receive sustenance. In these spaces staff may have access to refreshments, recliners to rest on when not working, and psychological counsellors if needed. The requirement for annual appraisal, revalidation, and inspection have all been paused and systems put in place to fast track the reinstatement of doctors returning to clinical practice. And a decreased workload means that doctors have time to connect with each other—something that, certainly in my profession of general practice, has otherwise been impossible because of the unrelenting demands on our time.

Around the world, healthcare staff are being applauded and thanked for their help and dedication to duty. The positive changes and public support seen with covid-19 are unprecedented in terms of other epidemics or pandemics, such as Ebola—where, for example, staff who worked with infected patients were shunned in case they infected others, and there was little recognition of the efforts they had gone to when working with infected people.

Given that burnout (which was at dangerous levels before covid) is linked to being undervalued and overworked, one could hope that the changes we're seeing will reduce their levels in the medical profession—but only if, on returning to normality, we learn and retain these positive interventions. Most importantly, we have to acknowledge that people working so close to suffering, death, and despair will need space and time to recuperate, reflect, and re-energise their psychological health.

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I'm impressed by how many doctors have shown remarkable resilience in the face of tremendous upheaval

PERSONAL VIEW Charles Swanton, Henry Scowcroft

How to protect "covid protected" cancer hubs

Many patients still face risks from nosocomial transmissions from asymptomatic healthcare workers and patients

People affected by life threatening conditions such as cancer have faced substantial treatment delays or modifications during the pandemic. In the early days this caution was understandable. For cancer, emerging data from small retrospective cohorts suggested a higher rate of serious complications or death following infection, particularly in late stage metastatic disease.

These delays to treatment, coupled with a large drop in diagnostic referrals, have raised concerns of a "post-pandemic surge" in non-covid associated mortality, as early stage, curable cancers progress to inoperable disease, or spread beyond the primary site.

To try to prevent this, there has been a rapid effort to reconfigure services to safely treat patients with new or existing diagnoses of cancer. In the UK, this has led to the establishment of "covid protected" cancer hubs where, after centralised triage to prioritise patients based on clinical need, patients are screened up to 48 hours before admission for surgery at "clean" sites, including those in the private sector. Other countries have taken similar approaches.

Such efforts are vital to reinstate safe care. Yet worries remain about the risks patients still face from nosocomial transmissions from asymptomatic staff and other patients. Are our "protected" sites adequately protected?

Substantial asymptomatic carriage

Emerging evidence suggests substantial asymptomatic carriage and transmission of the virus with a significant proportion of health workers carrying the virus pre- or asymptomatically. For truly "covid protected" cancer treatment, it will be essential to regularly screen staff in hubs.

Unfortunately, many countries are still not testing widely, frequently, or quickly enough to adequately prevent patients from infection during treatment. The health secretary Matt Hancock's announcement on 6 May that all medical staff are to be tested weekly is important, and will become more so as lockdown measures are relaxed. However, with so much focus on capacity, turnaround time has been neglected. Reliable UK data on this measure are lacking, and challenges to developing a rapid and accessible testing pipeline have not been sufficiently tackled. Indeed, in April, UK testing capacity exceeded the number of tests performed by twofold or more, pointing to major unsolved hurdles in logistics. Anecdotally, we've heard that turnaround times for healthcare worker testing can sometimes be upward of three days.

Overcoming barriers to rapid, routine staff and patient testing is essential for the restoration of safe cancer care

Overcoming barriers to rapid, routine staff and patient testing will be essential for the restoration of safe cancer care. Several opportunities present themselves. Self-swabbing and saliva approaches, rather than nurse led nasopharyngeal (NP) swabbing, could rapidly accelerate testing, with emerging suggestions that the former may be even more sensitive than NP swabs. Turnaround times would be boosted further by rapid, high throughput testing or next generation assays.

Distinct IT systems, with limited interoperability, delay the implementation and dissemination of widespread testing, particularly in the community. Local IT solutions are required, modelled to the community and healthcare system needs.

Taken together, such developments could enable twice weekly hospital testing of all hospital staff and patients cost effectively, safely, and rapidly.

However, a diagnosis of cancer is, like many serious conditions, accompanied by a

BMJ OPINION Aileen O'Brien

The challenges of a pandemic in secure psychiatric settings

FRANCOIS LENOIR/REUTERS/PA

Before covid-19, the phrase "parity of esteem" was ubiquitous. Policy makers and politicians emphasised the importance of high quality mental healthcare, insisting it was on an equal footing with physical healthcare. Most mental health professionals viewed this with some cynicism, especially those working in secure inpatient settings.

Is it reasonable to expect parity when it comes to covid-19? Arguably, it wouldn't be reasonable to expect the same focus on, for example, PPE and testing as that directed towards the acute emergency services and intensive care. However, inpatient units struggled with the lack of central guidance on managing patients who'd been diagnosed with or were suspected of having covid-19.

Mental health trusts have struggled with protocols and test availability

Patients with serious mental disorders are at high risk of physical health problems. While they are acutely unwell, they may not have the capacity to understand the need to self-isolate, may be unable or unwilling to be tested, and, if agitated, will be unlikely to be able to practise social distancing.

Mental health trusts have been struggling with protocols and the availability of testing, managing the direct contacts of patients, and, like other settings, with sourcing appropriate PPE.

There is intense debate about the apparent lack of appropriate legal frameworks. In the

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need for a range of secondary care services. We cannot just view them as "cancer" patients who need "cancer" services. This means rigorous, frequent testing of all healthcare workers working in proximity to patients—clearly an enormous task, requiring rapid organisational change. Naturally, as lockdown loosens, all patient admissions, both elective and emergency, will also need to be screened. To bring all this about, we must be flexible in the thresholds we set for evidence, particularly the need for stringent health economic evaluations, which almost seem absurd when the wider economic indicators are so catastrophic.

The benefits of getting this right would extend far beyond cancer care. Effective covid-19 therapies are still lacking, and a vaccine may be years away. In their absence, the coronavirus's main enemies are, currently, social distancing and PPE. They must also include widespread testing, with aggressive contact tracing and quarantining, and truly covid protected hospitals. Time is the virus's greatest friend. We must not delay.

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case of a voluntary or informal patient, can the Mental Health Act be used? The Mental Capacity Act is not appropriate as it applies to decisions in the patient's best interests, not for the protection of others. The Coronavirus Act 2020 gives public health officers the power to impose isolation on someone suspected of being infected, but this seems unlikely to extend to inpatient units.

If parity of esteem is ever going to be meaningful, the challenges of safely and securely managing covid-19 in the most seriously unwell patients with mental disorders needs to be given a higher priority.

Aileen O'Brien, honorary psychiatric intensive care unit consultant at South West London and St George's Mental Health NHS Trust

ACUTE PERSPECTIVE David Oliver

Doughnut deliveries and hospital staff

I've spent three decades working in acute hospitals. The stress, relentless pace, long shifts, and lack of access to fresh food around the clock have always seen staff use processed foods for comfort and mutual support.

Whether it's takeaways, cakes, or crisps—often bought by a member of the team or donated by patients—we're rarely far from snacking opportunities. Even in canteens offering healthy options, workers often gravitate to the comfort of pizzas or burgers.

During the pandemic, food and fizzy drinks feature among our coping strategies. A well intentioned public has supported us by volunteering, clapping, and sending gifts, including food. Some food companies and local shops have also donated, partly in the spirit of support but sometimes for positive publicity. In many ways, I wish they wouldn't: NHS staff have steady employment and income, whereas so many other workers are in economic strife.

The issues came to a head in April, when a picture was tweeted of 1500 Krispy Kreme doughnuts being delivered to hospitals in Barnet. The cardiologist Aseem Malhotra—an author of diet books and campaigner for low carb diets—was one of several medics on social media who condemned this as a marketing stunt. He argued that given the emerging data linking obesity to far higher morbidity and mortality in people with covid-19, the public health message, from clinicians who should be setting an example, was poor.

Malhotra then appeared on *Good Morning Britain* arguing that Boris Johnson, having contracted coronavirus, had become far more unwell than other, slimmer, political figures and that his obesity and lack of fitness were to blame. I found his comments and their speculative nature inappropriate, given Johnson's recent status as an NHS patient.

As for the doughnuts, evidence clearly shows that ready availability of cheap, high calorie processed foods and sugary drinks creates an obesogenic environment, often compromising individual choice and agency. Obesity among NHS staff reflects a wider population problem: in 2015 NHS England's chief executive, Simon Stevens, urged the NHS to "put its own house in order," including banning on-site junk food retailers and providing exercise classes. In 2017 he announced plans to cut processed foods and sugary drinks in hospitals.

I support the need for more healthy food options for hospital teams, more refrigerated storage for healthy meals, and chances to take proper breaks to eat, with access to exercise classes, discounted gyms, group activities, and cycle storage.

Ultimately, however, busy and stressed staff having the occasional free doughnut or take-out pizza in a pandemic is a side issue. In the short term, our morale matters as much as our waistlines, and people aren't idiots. We know full well that processed food is bad for us. What we don't need is lectures.

Give us a break. And let us eat cake.

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In the short term, our morale matters as much as our waistlines

PRIMARY COLOUR Helen Salisbury

Trust is the vital missing factor

Autonomy is one of the four pillars of Western medical ethics. People have a right to make their own decisions about what treatment to accept, as long as they have capacity to do so. My patients can—and often do—stop taking the tablets I prescribe, refuse surgery that could be curative, and ignore advice about alcohol, exercise, or smoking. It's my job to provide the information on which to base their decisions, and it's their right to ignore it.

Infectious diseases are an exception to the rules on autonomy. While you're at liberty to damage your own health, you can still be prevented from harming others. The Public Health Act 1984 and the new Health Protection (Coronavirus) Regulations 2020 enable enforcement of regulations to prevent the spread of infection. Enforcement is, of course, a last resort and not an efficient way of changing behaviour. If people know the rules and understand the reasons, most are likely to comply, as we saw at the start of lockdown. Clear messaging around rules, plus a combination of fear, altruism, and a generally law abiding public, meant that most people stayed at home.

Now the picture is less clear. Nobody knows what the rules are. We should not go to work—unless we have to; we should be socially distanced at work—unless that's not possible. We can have other people in our houses (nannies and cleaners), but we can't invite the people we most want to see. There is little sense or consistency, and the rules seem to be more about economic activity than infection control. As always, the people with lowest incomes have the fewest choices, being forced to use public transport where two metre separation is impossible, to return to working conditions that may be similarly unsafe.

If, aside from being in a constant and uncomfortable state of alertness, people are unsure what the rules are, we can't expect them to comply. Perhaps we just need to trust them to act sensibly—but how can people make sensible decisions without accurate information about risk? We know how many have died in hospitals and care homes from infections contracted weeks ago, but we have little clue as to the level of circulating virus in the local population.

The final missing ingredient is trust: a government that has counted single gloves as an item of PPE, classifies kits in the post as tests performed, and counts two different specimens from the same patient as two tests has lost the trust of the medical profession and the wider public. Our politicians have not only mishandled numbers but also shown world beating incompetence in their response to the pandemic. The test, track, and trace system we needed two months ago is still not operational. We'd better batten down the hatches for the second wave.

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Our politicians have shown world beating incompetence

LATEST PODCASTS

Dying in the community

This pandemic means that many communities are witnessing more deaths and people are experiencing the grief of an abrupt bereavement. The latest episode of Deep Breath In looks at how GPs can support patients at this time. Here, psychiatrist Katherine Shear talks about how people may be affected when they aren't allowed into hospitals to be with their loved ones for their last moments.

"We're caregivers of the people that we love and so it's going to trigger that side of us that feels they were inadequately taken care of. That leads mostly to either guilt or anger. So it's going to be anger at the system, at the virus, at the world. It's going to be anger at the doctors. Or guilt—thinking I should have gone anyway, I should have just pushed my way through and been there. People will have those kinds of thoughts."

Using viral epidemiology to combat fake news

In this podcast we hear from Adam Kucharski, a researcher who's used disease epidemiology tools to look at the spread of fake news. He discusses the parallels between viral transmission and fake news, and how our approaches to the former can inform the ways we tackle the latter:

"In recent years there's been a bit of a shift from this idea that we should somehow get rid of all bad information online to thinking more—much as you would for an epidemic—about how you reduce exposure. From sexually transmitted infections to vaccine preventable diseases, we try to reduce the exposure risk. And I think what companies are now doing is if you search for coronavirus information, you're preempted with reliable health information. Obviously, misinformation is still there, but it's much harder to access if you go to a search engine or a social network."

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Edited by Kelly Brendel, deputy digital content editor, *The BMJ*

ANALYSIS

Ethics of reallocating ventilators in a pandemic

Andrew Peterson and colleagues explore ways to protect vulnerable populations when making ethically fraught decisions about hospitals' use of scarce resources

ANDRE BORGES/NURPHOTO/PA

The moral fortitude of clinicians and health systems has been tested as the number of patients with covid-19 has grown. Experts initially warned that patients requiring ventilatory support could outpace ventilator supply.[1 2]

Increased ventilator production seems to have averted predicted shortfalls in some countries, including the UK and US, but fears remain that there will not be enough ventilators to meet demand, at least in infection hotspots. This situation raises the question of whether and, if so, how to withdraw ventilators from patients with poorer prognoses to reallocate them to others with better prognoses.

KEY MESSAGES

- The covid-19 pandemic will require clinicians and health systems to make ethically fraught life-and-death decisions
- Criteria to allocate scarce lifesaving resources may make older adults, people from minority communities, or people with disabilities vulnerable
- Frameworks for withdrawing and reallocating ventilators must be transparent and based on continually updated prognostic information and physiological profiles
- Triage teams should be set up to implement criteria for prioritisation to minimise bias and avoid unintended negative consequences
- Ongoing scrutiny of triage policies increases transparency and trust, and ensures that the most vulnerable among us are treated fairly

During a pandemic, health systems have a duty to steward scarce resources.[3] This principle, broadly endorsed in the US[4] and the UK,[5] requires that resources be allocated to "maximize the number of patients that survive treatment with reasonable life expectancy."[3] However, achieving this can lead to ethically fraught decisions. Experts state that, "because maximizing benefits is paramount ... removing a patient from a ventilator or an ICU bed to provide it to others in need is ... justifiable."[3] Similarly, the British Medical Association states that ventilators should be reallocated to "patients who are reasonably believed to have the capacity to benefit quickly."[2]

Privileging the duty of stewardship implies that reallocation of scarce resources is ethically permissible. If resource constraints became dire, it may even be ethically required. In all cases, the prospect of reallocating ventilators to maximise the number of patients who survive is ethically charged. Yet, the potential for this to disproportionately affect vulnerable populations—including older adults, people from minority communities, or people with disabilities—is a particular concern.

Some countries are still expecting an increase in cases and others risk a potential resurgence of covid-19 as physical distancing eases. We need to take stock and analyse difficult ethical questions in light of what we now know about covid-19 to help health systems prepare if the situation worsens again. Although we focus on the withdrawal and reallocation of ventilators, our analysis is also relevant to the allocation of other scarce resources, such as personal protective equipment, a challenge that will emerge in different guises throughout the pandemic.

Saving the most lives

Stewarding scarce resources requires health systems to use resources to save the most lives. This does not mean saving the most patients who previously enjoyed or are expected to enjoy a good quality of life. Broadly endorsed allocation frameworks make no assumptions about quality of life. Quality of life is difficult to assess, and assessment could be biased; it is therefore a poor guide for resource allocation in pandemics.[3] An individual's subjective assessment of their quality of life may inform decisions about their care (eg, in advance directives). But third person assessments for resource allocation are explicitly prohibited.

In theory, maximising the number of lives saved without taking account of quality of life can increase fairness for vulnerable populations. Practice is more difficult. Pernicious biases about the quality of life of vulnerable people (or the value of their lives) might still turn critical care into a life raft: the vulnerable are thrown overboard to keep the ship afloat.[6] To avoid this, health systems are encouraged to adopt transparent, evidence based triage protocols that classify patients according to priority levels.[4 7] Such protocols use physiologically based variables to assess which patients will benefit most from scarce resources, allowing for purportedly objective prognostication.

For these protocols to work effectively, however, health systems and clinicians need to know what allocation decisions will actually save the most lives. Early in the trajectory of covid-19, there was little evidence on what affected prognosis. Ventilation of patients with covid-19 was

rightly thought to facilitate positive outcomes. But emerging mortality data paint a more negative picture. A February 2020 study reported mortality above 80% for patients requiring mechanical ventilation.[8] More recent studies reported lower mortality, yet death rates still remain remarkably high.[9-11] Adaptive triage protocols, which actively incorporate new prognostic information about the progression of a disease, may help address crucial gaps in evidence.[7] Looking ahead, there is an urgent need to assess available evidence to create practical, broadly endorsed allocation frameworks that account for updated prognostic information.

Emerging data also suggest—counterintuitively perhaps—that, although mechanical ventilation for patients with covid-19 is far from futile, it may sometimes be appropriate to withdraw ventilators from patients with covid-19 to reallocate them to patients with other conditions who require ventilatory support. Indeed, the BMA strongly urges that, "by itself, infection with covid-19 should not guarantee priority."[2] As health systems resume routine care with a more diverse case mix, there is an additional need to consider how to navigate trade-offs in the reallocation of lifesaving resources between patients with and without covid-19. A systems level approach that considers how reallocation affects different aspects of an entire health system could mitigate unintended negative consequences of these trade-offs (box).

PRIORITISING ONE GROUP OF PATIENTS AT THE EXPENSE OF ANOTHER

Overemphasis on reallocation of lifesaving resources to patients with covid-19 without sufficient evidence could have unintended negative consequences for vulnerable populations. In the race to save lives, many governments focused on surge capacity in acute care hospitals while subacute care facilities, which often house older adults and people with disabilities, remained largely overlooked.[12 13] As a result, vulnerable groups were not adequately protected. Nursing homes became hotspots for covid-19 transmission and deaths.[14]

Looking forward, we must broaden our conception of reallocation decisions beyond trading one patient on a ventilator for another. Instead, reallocation decisions should take a systems level approach so that attention to bolstering care for some patients does not come at the expense of caring for others.

Triage and discrimination

Poorly designed triage protocols that treat disability as a contraindication to receiving scarce resources—or that prioritise categories of people for withdrawal—could open health systems to legal and ethical claims of unjust discrimination. Triage protocols that categorically exclude all patients with cognitive disabilities from receiving mechanical ventilation for covid-19, for example, commit "but for" exclusions: these patients would have received a ventilator "but for" their disability.

In response to these concerns, leading advocacy and governmental organisations have taken steps to mitigate discriminatory triage policies. In the UK, the National Institute for Health and Care Excellence (NICE) modified triage guidelines to prevent unfair disadvantages for people with disabilities admitted to intensive care.[15] Alzheimer Europe urged health systems to recognise that people with dementia "can live many years ... with a high quality of life" and therefore should not be "refuse[d] access to treatment" because of their diagnosis.[16] Finally, the US Department of Health and Human Services has resolved several complaints against health systems for adopting triage protocols that do not comply with the Americans with Disabilities Act, Rehabilitation Act, or Affordable Care Act.[17]

Health systems can mitigate discriminatory triage policies by ensuring that each patient is assessed individually and the results used to make a transparent, evidence based prognosis.[3-19] Pre-existing disabilities might be relevant to withdrawal and reallocation of ventilators, but only if they follow from an individualised assessment. Additionally, triage decisions should be made by independent triage teams that include relevant medical experts, legal counsel, and health system administrators.[4-19] These teams are responsible for repeatedly assessing patients' priority. This practice is recommended in triage protocols broadly adopted in the US. Deferring ventilator withdrawal and reallocation decisions to triage teams aims to increase prognostic objectivity and minimise the harmful effects of discriminatory bias or conflicts of commitment.

Even if health systems make efforts to mitigate direct discrimination, health disparities can still result in indirect discrimination because of the effect of pre-existing conditions on prognosis. A concern in the covid-19 pandemic is that pre-existing health disparities, fuelled by unjust social conditions, unfairly disadvantage certain vulnerable populations.[20] In the US, people of colour have a higher burden of disease (eg, hypertension and diabetes) than other populations. Such comorbidities can contribute to poor prognoses in covid-19 and thus limit priority for lifesaving resources.

The BMA acknowledges this problem, but advises that indirect discrimination might still be legally justified: "Although a 'capacity to benefit quickly' test would be

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Independent triage teams may insulate frontline clinicians from the anguish of deciding who lives and who dies

indirect discrimination, in our view it would be lawful in the circumstances of a serious pandemic because it would [fulfill] the requirement to use limited NHS resources to their best effect."[2] Rather than concede that indirect discrimination is inevitable, we think advocacy and governmental organisations should act to mitigate longstanding injustices that contribute to health disparities.

No consensus exists on how to address indirect discrimination in triage, but several candidate mechanisms could be used, including weighting triage scores with an area deprivation index that accounts for social determinants of health, including patient advocates from disadvantaged communities in triage teams, or periodic auditing of triage decisions to quickly detect and ameliorate indirect discrimination.

Lastly, health systems should refrain from forcibly withdrawing and reallocating ventilators from patients cared for in subacute facilities who receive long term ventilation.[21] Such reallocation of ventilators might save more lives, but it would conflict "with the societal norm of defending vulnerable individuals and communities"[4] and may quickly devolve into ruthless utilitarianism. In our view, constraining reallocation decisions to the acute care setting helps to balance competing ethical duties and further protects vulnerable populations from discrimination.

Emotions and reallocation

Because resource constraints may force difficult decisions about withdrawal and reallocation of ventilators, health systems must prepare for the emotions elicited by these decisions. Experts argue that, in a pandemic, "the decision to withdraw a scarce resource to save others is not an act of killing."[3] But even if this is true in theory, it might not feel true in practice.

Families will reasonably feel grief, anger, and confusion; families of patients with disabilities might additionally suspect discrimination. Clinicians will feel grief and powerlessness in the face of decisions that conflict with their ethos to care. And patients who receive a ventilator may experience survivor's guilt if they suspect that they lived at the expense of another's life. Clearly, withdrawal and reallocation of ventilators could add to the already substantial psychological burden of covid-19.

Best practices should be identified to lessen these emotional burdens. Experts recommend that patients, families, and clinicians be notified on admission (or when a triage policy is implemented) that withdrawal and reallocation might occur.[3] This would allow time to psychologically prepare, seek out alternative medical support if available, or forgo mechanical ventilation altogether, as withholding is sometimes perceived as easier than withdrawing. Encouraging clinicians to seek psychological support early could also mitigate downstream emotional consequences. Independent triage teams could be effective here as well[4 7] because they could insulate frontline clinicians from the anguish of deciding who lives and who dies.[19] Attention must be paid, however, to the psychological burden placed on triage teams if they assume responsibility for these decisions.

NEILHALL/PA

To promote clear communication of medically complex and ethically challenging messages, we suggest that health systems develop covid-19 "talking points," such as those offered by VitalTalk,[22] a National Institutes of Health funded organisation dedicated to improving physician-patient communication. Social workers and medical interpreters, as well as the vulnerable populations affected by triage decisions, should be central in this process.

When withdrawal does occur, experts advise it should be respectful and dignified, with the provision of adequate palliation. Restrictions on hospital visitors to reduce spread of covid-19 may lead to some patients dying alone.[23] Health systems should consider whether allowing visitors for dying patients is possible or if technology can be used to achieve death with dignity.[24] This may include remote access to spiritual support or follow-up with family unable to be at their loved one's bedside. These approaches might even be adapted from models of interacting with families during organ donation, which emphasise transparent and compassionate communication.[25]

Health systems should also prepare for the long term psychological effects on clinicians and families.[26] In non-pandemic situations, moral distress is common among clinicians.[27] However, this distress is likely to be exacerbated under pandemic conditions, particularly if ventilator withdrawal and reallocation is required. Guidance for managing these psychological effects might be adapted from therapeutic approaches for the care of those who experience trauma in natural disasters or war.[28] Families will likewise have longlasting negative emotions, which could lead to distrust of clinicians or health systems generally. Health systems should implement evidence based practices to deal with this. Public scrutiny of recommendations for the withdrawal and reallocation of scarce lifesaving resources is also vital. Vigorous debate can enhance transparency and trust in triage policies and ensure that the most vulnerable among us are treated fairly.

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LETTERS Selected from rapid responses on bmj.com

LETTER OF THE WEEK

Negative effects of wearing face masks

Greenhalgh and colleagues say that surgical masks should be worn in public to prevent some transmission of covid-19, adding that we should sometimes act without definitive evidence, just in case (Analysis, 25 April). Two side effects of wearing face masks in public have already been highlighted—wearing a mask may give a false sense of security, and people must avoid touching their masks.

Other potential side effects that we must consider are:

- The quality and volume of speech between people wearing masks is considerably compromised, so they might unconsciously come closer
- Wearing a mask makes exhaled air go into the eyes. This generates an impulse to touch the eyes. If your hands are contaminated, you are infecting yourself
- Face masks make breathing more difficult. A fraction of carbon dioxide previously exhaled is inhaled at each respiratory cycle, which increases breathing frequency and deepness, and might worsen the burden of covid-19 if infected people wearing masks spread more contaminated air. This might also worsen the clinical condition of infected people if the enhanced breathing pushes the viral load down into their lungs
- The innate immunity's efficacy is highly dependent on viral load. If masks determine a humid habitat where SARS-CoV-2 can remain active because of the water vapour continuously provided by breathing and captured by the mask fabric, they determine an increase in viral load (by re-inhaling exhaled viruses) and therefore they can cause a defeat of the innate immunity and an increase in infections.

The context of the current covid-19 pandemic is very different from that of the "parachutes for jumping out of aeroplanes." We must quantify the complex interactions that might be operating between positive and negative effects of wearing surgical masks at population level. This is not the time to act without evidence.

Antonio Ivan Lazzarino, director, EPISTATA—Agency for Clinical Research and Medical Statistics; Andrew Steptoe, professor of psychology and epidemiology; Mark Hamer, professor of sport and exercise medicine; Susan Michie, professor of health psychology, London

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COVID-19: SHOULD THE PUBLIC WEAR FACE MASKS?

Evidence or eminence?

The potential negative consequences of a policy shift to encourage the public to wear face masks (Analysis, 25 April) deserve more consideration.

First, the technical challenges in mass mask adoption should not be underestimated. Even healthcare workers can struggle with appropriate mask use; cloth masks are less effective than medical masks; and poor use reduces effectiveness and poses an infection risk. Second, encouraging uptake of face masks might lead to "risk compensation": reduced compliance with other measures. Third, there are potential societal consequences, such as a rush to obtain equipment intended for use by healthcare workers or using mask wearing to justify unsafe workplaces or commuting conditions. Finally, the indirect consequences of an intervention in a complex system are inherently difficult to predict. Both anticipating unintended consequences and adapting measures after implementation are vital. Policy, however, is a blunt tool; premature change in policy impedes both.

Public communication about the scientific view of the risks and benefits of widespread uptake of face masks has exceeded the evidence. Unequivocal advocacy for face masks risks overstepping current knowledge and promoting policy change based more on eminence than evidence.

Graham P Martin, director of research, Healthcare Improvement Studies Institute; Esmée Hanna, reader in health and wellbeing in society, Leicester; Robert Dingwall, consulting sociologist and professor of sociology, Nottingham

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2 metres isn't far enough

Introducing blanket policies for the public to wear face masks has major problems, many of which have been pointed out (Editorial, 25 April).

Another important, yet not widely debated, risk regarding distancing and masks must be carefully considered because it could have serious repercussions. We have shown how an exhalation behaves, including how far it can travel. Small and larger droplets, even in short small breaths, are transported far beyond 1 metre. For larger volume, more energetic breaths, the exhalation and droplet burden travel well beyond 2 metres.

Thus, a simple 2 metre distance rule might be inappropriate for preventing droplet transmission between people in many situations.

Airborne outdoor tobacco smoke is a reasonable surrogate for small droplets suspended in the air. An experimental study found that exhaled outdoor tobacco smoke was detectable over 9 metres from its source.

This known behaviour of exhaled air is crucial when considering social distancing advice particularly regarding exercise, such as running, which is associated with large volume exhalations and forces. In such circumstances a 2 metre separation is most unlikely to be an effective barrier. Its use should be urgently reviewed.

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Any way the wind blows

Discussion on whether face masks are effective (Analysis, 25 April) often fails to differentiate between who is being protected, in what physical manner, and the spatial relation between host and recipient. Surgical masks or similar reduce direct outward velocities of ejected droplets from a cough, sneeze, or ordinary out breathing and can help make velocities more uniform. They will also typically coalesce small droplets into larger ones, enabling faster dropout in air before reaching a recipient. If the host's mask is moist or wet, velocity reduction and coalescence properties will be largely retained (though limits exist).

The spatial relation between host and recipient is very important. Droplet separation calculations show that 2 metres is inadequate for the smallest droplets, even in "still air." In a wind, small and large droplets might be blown considerable distances. Less than 2 metres might be adequate to avoid infecting a recipient if the host is downwind; much larger distances might be insufficient if the host is upwind. A crosswind is favourable. If a host coughs or sneezes in an environment with an air conditioning system, even non-perceived cross draughts will distribute small droplets in the room or building.

Cliff Grover, retired chartered chemical engineer, Banchory

Cite this as: *BMJ* 2020;369:m2016

Asking the wrong questions

We agree that decision making should be based on scientific knowledge, but when knowledge is incomplete, judgments based on precaution and pragmatism become necessary (Analysis, 25 April).

Non-medical grade "social" masks must be one element alongside other social measures (personal hygiene, physical distancing, and so on). In the epidemic growth phase, masks might mitigate viral transmission by asymptomatic patients and thus limit the epidemic's growth rate. But isolation and physical distancing are most important to control transmission at this point, and social mixing with masks should be discouraged. Masks should be used from the consolidated start of the decline in contagion as part of a phased reduction of lockdown measures and a return to economic activity. If widespread use of masks is implemented, we need a strong public training campaign.

We have been asking the wrong questions—masks are not for the protection of the user, but of the wider public.

John D Middleton, president, Association of Schools of Public Health in the European Region; Henrique Lopes, professor and researcher of public health, Porto

Cite this as: *BMJ* 2020;369:m2030

Reinforcing health inequalities

Before implementing guidance about face masks at scale (Analysis, 25 April), we must consider how it might benefit some but not others.

The health effects of covid-19 and social distancing will be experienced differently within populations. Manual key workers, those unable to work from home, and those who fear for their jobs will have increased exposure. Social distancing works better for some people than others, and risk factors differ sharply across social gradients.

Engagement with health promotion messages also varies along sociodemographic lines and levels of health literacy. Promoted health behaviours such as hand washing will mirror these differences.

Rapid action is necessary, but key messages might unintentionally reinforce health inequality. A policy promoting face masks for the public seems desirable in the absence of clear harms. But care should be exercised to ensure that variable uptake does not reinforce existing health inequalities and perpetuate Julian Tudor Hart's inverse care law.

Michael R Robling, professor and director of population health trials, Cardiff

Cite this as: *BMJ* 2020;369:m2001

Avoiding mask fatigue

Greenhalgh et al (Analysis, 25 April) and Javid et al (Editorial, 25 April) argue for public use of face masks. We must consider "mask fatigue." Most people cannot tolerate wearing a mask all day; others can but quickly develop resistance to using it further.

We don't yet know how to ensure that masks are worn when needed without leading to fatigue. The efficacy of surgical masks in filtering SARS-CoV-2 has been questioned, and we don't know whether asking both infected and uninfected parties to wear masks is advantageous.

The Singapore experience indicates that the virus might not burn out in hot weather. But keeping masks on is harder in summer. The moisture from sweat might render the mask ineffective and create a favourable habitat for the virus. The utility of mask wearing is probably limited in the current outbreak, but we need more research about the efficacy of masks for cutting transmission to inform policy in the next outbreak.

Sheung-Tak Cheng, university professor, Hong Kong

Cite this as: *BMJ* 2020;369:m2005

Loss of subtle facial expressions

Greenhalgh et al say that population benefits are plausible for face masks, and harms unlikely (Analysis, 25 April). My experience leads me to the opposite conclusion.

As an anaesthetist, I meet my patients on the ward, where we both wear surgical masks. Communication is not "all in the eyes." Many subtle facial expressions—twitches of mouth and wrinkling of nose that convey a range of emotions—are lost, and my hopefully reassuring smiles remain unseen. In theatre, I greet them in full personal protective equipment with fitted mask and muffled voice, magnifying their fear and apprehension.

Wearing face masks would foster an air of distrust and blame, with the loss of reassuring facial communication. Those not wearing masks might experience abuse or intimidation.

Optional mask wearing seems sensible. Living in a society where our faces are concealed based on an interpretation of the "precautionary principle" as there is "little to lose?" I beg to differ.

Frances M King, consultant anaesthetist, Portsmouth

Cite this as: *BMJ* 2020;369:m2009

Potential biohazards

Javid et al say that "population benefits are plausible and harms unlikely" if the public are encouraged to wear face masks (Editorial, 25 April). In the week of 17-24 April we both found discarded surgical face masks on public roads on our way to work. On a single day, one of us found six discarded masks on a cycleway. This was before any encouragement from the government for the public to wear masks. These discarded masks are a potential biohazard that must be managed in a similar way to discarded hypodermic needles and syringes.

Additionally, the value of masks to protect the public is diminished if they are incorrectly worn. We have seen other health professionals wear masks below the nose or on the chin because of the discomfort they cause. Why should we expect the public to exhibit greater care in their mask wearing to ensure that the benefits outweigh the risks?

James H Bamber, consultant anaesthetist; Tracey Christmas, consultant anaesthetist, Cambridge

Cite this as: *BMJ* 2020;369:m2012

OBITUARIES

Victoria Adetola Adewole

Innovations associate Wellcome Trust (b 1986; q Imperial College London, 2010; MSc), died from respiratory failure secondary to sarcoidosis on 13 March 2020

Victoria Adetola Adewole ("Vicky") was diagnosed with sarcoidosis when she was 9 years old; she had progressive respiratory disease and challenging medical issues throughout her professional life. She was on the UK lung transplant list for the past six years. As a consequence, in 2014, she took the measured decision not to apply for specialist training in surgery and enrolled in a part time MSc in global health at the London School of Economics. In 2018 Vicky was recruited to the innovations team at the Wellcome Trust. We are deeply saddened by the loss of our close colleague and friend. There is some solace in the fact that the organ donation law in the UK is changing in May 2020, and other patients in similar situations may have better outcomes. Vicky leaves her parents and siblings.

Tehmina Bharucha, Lucy-Anne Frank

Cite this as: *BMJ* 2020;369:m1656

Krishna Aggarwal

Consultant anaesthetist (b 1933; q Mumbai, India, 1959; FFARCS), died after a brief illness on 5 April 2020

Krishna Aggarwal came to the UK in 1960 and trained in Liverpool and Southend-on-Sea. She was appointed as a consultant at Pinderfields Hospital, Wakefield, in 1968. This was unusual as it was before equal rights and especially as she was a female Indian doctor. She was highly regarded for her high quality work, and her department helped develop junior doctors to the highest standards possible. Krishna was an avid traveller, and her home was her temple for people's pilgrimages to share interesting conversations and home cooked food, made with love and joy. Krishna lived life on her own terms. Still driving to purchase the *Times*, she remained connected to her many friends who shared her enthusiasm for the crossword. Krishna will be deeply missed by her family and friends.

Virinder Nohria

Cite this as: *BMJ* 2020;369:m1657

Amged El-Hawrani

Consultant ear, nose, and throat surgeon (b 1964; q 1993), died from covid-19 on 28 March 2020

Amged El-Hawrani died after three traumatic weeks in critical care. He was considered by the NHS to be one of the first UK frontline doctors to die during the pandemic. He was born in Sudan; his family moved to the UK in 1975 and finally settled in Bristol in 1979. Amged was appointed to a consultant post at Queen's Hospital, Burton on Trent, Staffordshire, in 2006. Apart from paediatrics, Amged developed a special interest in head and neck surgery, thyroid surgery, and skin cancer. Recently he had taken on the role of associate clinical director for the ENT department, which stretched him even further, but he never complained. He had a particularly good reputation as a clinical teacher. He was devoted to his family and leaves his wife, Pam, and son, Ashraf.

Adrian Thompson

Cite this as: *BMJ* 2020;369:m1658

Ronald Marks

Professor of dermatology University of Wales College of Medicine (b 1935; q Guy's Hospital Medical School, 1959; DTM&H, FRCP Lond, FRCPath), died from complications of diabetes and pneumonia on 24 February 2020

Ronald Marks was a giant of late 20th century dermatology, an original thinker, effective teacher, and enthusiastic clinician. He created a vibrant academic department in Cardiff that focused on skin measurement and the stratum corneum. He organised international meetings, published widely, founded the *Journal of Dermatological Treatment*, and developed postgraduate dermatology courses. He enjoyed close links with the University of Miami and in retirement continued to lead Cutest, his "spin-off" company. He leaves his wife, Hilary; his children, Louise and Naomi; stepchildren, Charlotte and Siobhan; and five grandchildren.

Andrew Finlay

Cite this as: *BMJ* 2020;369:m1655

Bruce William Richards

General practitioner and regional medical officer (b 1925; q St Thomas' Hospital Medical School, 1948; FRCGP), died from pneumonia on 8 December 2019

After residency posts at St Thomas', Bruce William Richards spent two years' national service in the Royal Air Force at Nuneham Courtenay and one year at bomber command at High Wycombe. Bruce started in general practice in Bedford in 1954, followed by 19 years at the Kendrick House practice in Newbury. In 1973, when the NHS reorganisation was in the air, he moved to Sheffield as specialist in community medicine, healthcare planning, and then district community physician at the Sheffield Area Health Authority. He later progressed to be regional medical officer for Trent Regional Health Authority. After retiring in 1988, he spent some six years working as a consultant to Trent region. He leaves two sons, three grandchildren, and two great grandchildren.

Martin Richards

Cite this as: *BMJ* 2020;369:m1659

Peter John Watkins

Consultant physician King's College Hospital (b 1936; q Cambridge/ Barts 1962; MD, FRCP), d 16 May 2019

Peter Watkins was consultant physician to King's College Hospital for over 30 years, but his influence spread far beyond south London. He was a pioneer of multidisciplinary diabetes care. He chaired professional societies, presented lectures, and received awards. But he did not restrict his enthusiasm to diabetes in the UK—he also greatly improved the outlook of people with diabetes in Ethiopia. He was director of postgraduate education at King's College Hospital from 1989 to 1998. He disseminated his wisdom through many media, but perhaps most famously through his ABC of Diabetes, a series of articles in The BMJ that was then published in book form. Predeceased by his first wife, Gillian, Peter leaves his wife, Val Brown, and their children and grandchildren.

S A Amiel, M Edmonds

Cite this as: *BMJ* 2020;369:m1660

Inesa Benedictovna Kozlovskaya

Expert on motor control and space medicine

Inesa Benedictovna Kozlovskaya (b 1927; q First Moscow State Medical Institute, MD, PhD), d 19 February 2020

Inesa Benedictovna Kozlovskaya was born in Harbin in China, where her father administered the Soviet consulate. In 1938 the family moved to Moscow and in 1945 Kozlovskaya became a student at the First Moscow Medical Institute (now the IM Sechenov First Moscow State Medical University).

On graduating she entered a doctorate programme at the department of normal physiology, and in 1955 defended her dissertation on the Impact of Higher Parts of Nervous System on Morphological Composition of Blood in Animals. She then worked as an assistant professor at the department under the guidance of the Soviet physiologists Piotr Anokhin and Mikhail Usievich. In 1959 she moved to the Institute of Higher Nervous Activity and worked at the laboratory of Georgy Skipin, who studied instrumental conditioning.

Research in the US

Despite the cold war, a programme of academic exchange between the Soviet Union and the US had been running since the 1960s. In 1966 Kozlovskaya was selected as the first Soviet researcher for a fellowship at Vernon Brooks's laboratory in New York City to study the neural basis of motor control. Unexpectedly, her husband was also sent to US by the Soviet Ministry of Health as a medical adviser to the Soviet mission at the UN.

Kozlovskaya was given a diplomatic passport and was therefore unable to work at American institutions. But she was invited to the Rockefeller Institute, where she spent several months until she was able to join Vernon Brooks. Kozlovskaya researched the role of cerebellum in managing movements in apes.

Kozlovskaya and her colleagues tried to adapt the results of locomotor training in space flight and microgravity into neurorehabilitation practice

On her return to Moscow in 1971 she was employed at the Institute for Information Transmission Problems. There was then no opportunity to work on apes, so Kozlovskaya started clinical experimentation at the Institute of Neurology at the neurogenetics laboratory headed by Elena Markova and the department of neurosurgery headed by Eduard Kandel, a pioneer of stereotactic neurosurgery in the USSR.

In 1975 she defended her professorial habilitation thesis on Afferent Control of Voluntary Movements: An Experimental Study. The following year it was published as a book. In 1977 Kozlovskaya was invited to the Institute of Biomedical Problems (IBMP) by its director, Oleg Georgievich Gazenko (read obituary on www.bmj.com) because of her research experience with apes. Gazenko headed Bion, an international animal research programme. Six space satellites were launched carrying 12 rhesus monkeys with implanted electrodes. As principal investigator Evgeny Ilyin noted, "such experiments would be impossible to perform nowadays."

The project lasted until 1996, and Kozlovskaya stayed at IBMP for the rest of her life. From 1986 to 2018 she was a head of the department of sensorimotor physiology and countermeasures, which includes four laboratories. Kozlovskaya was also a head of a laboratory of gravitational physiology of sensorimotor system. Her research was focused on gravitational physiology and space medicine. She oversaw the physical training and evaluation of the physical capacity of cosmonauts during long term space flights' space stations. She also had a key role in the wide programme of studies in ground based models of the physiological effects of microgravity, such as antiorthostatic bed rest and dry immersion.

On the basis of the results of these studies, she described temporary weightlessness ataxia and hypogravitational motor syndrome after prolonged space flights. Kozlovskaya and her colleagues tried to adapt the results of locomotor training in space flight and microgravity into neurorehabilitation practice.

Honours

Kozlovskaya was an honoured scientist of the Russian Federation (1996), corresponding member of the Russian Academy of Sciences (2000), state prize laureate (2001), and received numerous international awards in space medicine. She was a member of the International Academy of Astronautics and the Commission on Life Sciences of the International Academy of Astronautics, among others. She was a joint director of the Department of Life Sciences of the International Space University.

Predeceased by her husband, Georgy Ivanovich Avdeev, Kozlovskaya leaves two children, two grandsons, and four great grandchildren.

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Cite this as: *BMJ* 2020;369:m1363