Hold onto your red thread

My Welsh comprehensive school education stood me in good stead for rugby, but less so for Greek mythology. I may have come late to the classics, but I have recently read about how Theseus defeated the Minotaur and found his way out from the labyrinth and back to safety, by following a thread of red wool that he had tied to the entrance.

No matter where you work in the healthcare system, this year is going to be very hard. As the covid-19 pandemic spreads around the world we may lose patients, colleagues, friends, and even members of our family. Yet we need to focus our energy on the things we can control and not on the things we cannot. And so, in this time of turbulence, the most important thing that we must be sure not to lose is ourselves.

The deeper we go into the labyrinth of work, the more important our own “red thread” becomes. For some of us, that thread may be tied to exercise—a bike ride to work or a run through the park. For others it will be tied to music, or cooking, or spending time in the garden. Many of us throw our energy into caring for our children or our pets when we come home, after a long day spent working in protective clothing. Others may tie the red thread to red wine, but they need to be careful that the glass doesn’t smash as the thread is tugged ever harder.

Safely stepping away
Just as we need to check whether it’s safe to approach when treating infected patients, we should also check that we can safely step away after we are done with our day’s work. And, as we walk back through the doors between our places of work and our places of life, we need to remember to hold on tightly to that red thread, now more than ever.

Make the time to follow the thread’s path back to the place it was tied, and try to look around you as you make that journey. Put your phone back in your pocket, put away the worries about patients that you carry around in the back of your mind, and grab that red thread with both hands, even if just for a little while.

And if the thread has become loose, if it is untied, or if you are already too deep into the labyrinth, ask for help to find another thread. Don’t lose yourself.

Matt Morgan, intensive care consultant, University Hospital of Wales
mmorgan@bmj.com
Twitter @dr_mattmorgan

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The most important thing that we must be sure not to lose is ourselves
An opportunity for gender equality at home and work?

The covid-19 pandemic could help unravel gender norms

Anneliese Dodds was giving her first interview as the shadow chancellor on 6 April when her young daughter gate crashed the video call. The TV presenter resolutely responded, “She’s welcome any time on this programme.” This contrasts with the widely shared clip of political analyst Robert E Kelly, whose children, in 2017, interrupted a live interview with the BBC and a Twitter storm over gendered domestic care roles followed. But we now live in a different world: whereas Kelly found global notoriety, thanks to covid-19 a whole world of domestic responsibilities and burdens are obvious through video links into people’s homes.

We have written elsewhere about the gendered impact of covid-19, and we are leading a project to collect evidence of these differential experiences. If we see increasing rates of infection among healthcare workers, then this will undoubtedly have a disproportionate effect on women who make up most of the global health workforce. We know from Zika and Ebola that routine distancing measures stretch from weeks into months, this impossible balance is going to become even more precarious, with potential negative mental and physical health impacts.

With bosses being able to see into people’s homes, we hope this raises opportunities for flexible working to increase, for recognition of the balance that many perform between paid and unpaid work, and for recognition of who in the household undertakes this labour. We also hope for greater recognition of the importance of secure childcare—a sector almost exclusively staffed by women and frequently undervalued—to both families and our economy. While norms of social reproduction indicate that the burden of domestic responsibilities is likely to fall to women, this could have two effects: first, a recognition that women disproportionately take on this burden, and considerations for how to formally recognise this in economies; and, second, the recognition that men no longer have to bear the lack of funds, staff, and government support.

In 2017, a Conservative government also ushered in bitter press coverage, and Brexit managed to block a vote to give nurses a pay rise. In 2016, the junior doctor strikes were delayed, chemotherapy is postponed, operations are cancelled—all from a chronic lack of funds, staff, and government support.

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Jennifer Darlow

Thanks for the support, but I don’t want you to clap

Every Thursday evening, for the past few weeks, people have stood outside their homes or hung out of open windows and clapped. In huge numbers, they’ve been applauding NHS workers for their efforts and my social media has been full of emotional tributes to our hero healthcare workers. But to me, the clapping is bittersweet.

It’s not that I doubt people’s good intentions. I sincerely believe that those clapping genuinely want to show their gratitude. It’s just that, for me, it’s tainted.

What we need, and have needed for years, is more resources. We were feeling the blunt edge of staff shortages long before the pandemic. We have seen patients stuck in hospitals for weeks as there is not enough social care provision for their discharge.

Nurses and allied health professionals work long, unsociable hours on poor wages. We have constant rota gaps. Treatments are delayed, chemotherapy is postponed, operations are cancelled—all from a chronic lack of funds, staff, and government support.

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So when the applause has faded, please don’t forget us

We hope for flexible working to increase; for the balance between paid and unpaid work to be recognised; for the recognition that women disproportionately make up most of the global health workforce. We were feeling the blunt edge of staff shortages long before the pandemic. We have seen patients stuck in hospitals for weeks as there is not enough social care provision for their discharge.

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What shielding reveals about ageism

Older age and a range of underlying medical conditions mean a higher risk of serious illness, admission, and death from covid-19 than in younger or fitter groups. Over 70s have been advised to avoid unnecessary social contact, remain largely indoors, and to do any outdoor exercise at a safe distance from others. The reaction of some older citizens to this announcement shone a light on wider attitudes towards ageing—not least from older people themselves.

There are some very legitimate concerns. Older people are already prone to social isolation and loneliness. They may worry they’ll lose further fitness by staying indoors; that their contributions as good neighbours, volunteers, and workers will be lost; and they’ll still require food, drink, and maybe personal care. But there are ways to mitigate many of these.

This may not have been communicated clearly enough, but the policy has a clear rationale, as justified by modelling from Imperial College. Part of that rationale is not to belittle older people or fail to recognise their diverse levels of youthfulness.

I’ve devoted my professional life to care of older people and have campaigned against ageist attitudes and blatant discrimination. But even the Equality Act allows for some “differentiation” based on age, as “a proportionate means of achieving a legitimate aim.” Not having avoidably large numbers of people over 70 being admitted acutely to hospitals, and with a far higher risk of what could be an unpleasant death from respiratory distress syndrome, seems legitimate to me.

Of course, many people in their 70s and 80s remain fit, active, independent, and socially connected. However, even fit older people show poorer immune responses than their younger selves. The speed of the pandemic doesn’t allow us to assess each person over 70 for individual risk—and the government has made a pragmatic decision.

What is undoubtedly ageist is a collective fear of ageing and death in our societal and media values, meaning that appearing old is seen as being diminished, invisible, and unvalued. This in turn leads to older people themselves “othering” any older people they see as being vulnerable, different from their more youthful and active selves. This can lead to “grey on grey” ageism.

The policy on over 70s is not an excuse for a youthfulness contest or to take umbrage. It’s a serious business, which earlier generations who went through wartime privations would recognise.
The Easter bank holidays were cancelled for general practices at short notice, to take the pressure off out-of-hours services in anticipation of a rise in demand. Most of my patients assumed we were closed, so I spent the time trying to unravel the confusion generated by the government’s shielding programme. People who are at high risk of complications if they contract coronavirus have received a letter advising them to be in strict isolation for at least 12 weeks from the end of March.

The accuracy of the centrally generated lists depends partly on the quality of prior coding in GP notes, and our list has certainly revealed some imperfections. Sometimes it was possible to work out the reason for a patient’s inclusion, such as an episode of neutropenia in the context of a long forgotten illness, or a cancer that was treated successfully 15 years ago.

But in other instances it wasn’t clear, and I ended up calling patients to ask, “That letter you received—do you have any idea why you got it?” When we concluded it was an error, most patients were relieved, although some felt cheated of prized grocery delivery slots. There are also many people GPs believe are at high risk who don’t appear on any list—particularly those with neurological disorders and resulting poor respiratory function.

But can we be confident the government is shielding the right people? If we look at the emerging data about who dies from this disease, underlying illnesses are certainly relevant, but other major factors seem to be age, sex, and ethnicity. Estimates suggest that ethnic minority workers comprise around 70% of the NHS staff who have died so far, despite making up only 20% of the workforce. This is a disparity we should not ignore.

An emergency medicine consultant in Wales, who revealed that 50% of his colleagues had tested positive, has highlighted widespread fears that we can’t entirely rely on our personal protective equipment. If that’s the case, shouldn’t we be making shielding lists within our profession? Acting on a precautionary principle, we need to reassign older, male, ethnic minority doctors to non-face-to-face duties before we lose more colleagues.

While we grieve for lost medical friends, we also need to think about district nurses and social care workers who are arguably at even greater risk. Many have wholly inadequate PPE while providing close personal care—and, with so little testing, they lack information about who may be infectious. Seeing a way out is not easy, but all agree it must involve testing, contact tracing, and more testing. It has been promised, but—like so much PPE—it has not been delivered.

“We are in a country that has been suffering from a decade of austerity. We’ve had severe cutbacks to the NHS and particularly the public health function. I suspect that there was a degree of fatalism among those involved [in the government’s response] who said, well, you know, maybe we would like to do lots of things like contact tracing and clamping down whenever cases were found. But there was a feeling that actually we know we can’t do it. We don’t have the capacity.”

Talk Evidence: Face masks, models, and hydroxychloroquine

The Talk Evidence team assembled for their now weekly discussion of the latest evidence dilemmas around covid-19. Here Carl Heneghan, editor in chief of BMJ Evidence-Based Medicine, lays out his concerns about the current research landscape:

“I have serious concerns about a lot of the research that is being published at the moment—how much we can trust it, how much we can verify the results. Halfway through this pandemic, nobody really has a clue about any treatment that could work. A systematic approach with good clinical practice and the right research done in the right way could help us; what’s happening at the moment is adding to the disaster.”
The precautionary principle is, according to Wikipedia, “a strategy for approaching issues of potential harm when extensive scientific knowledge on the matter is lacking.” The evidence base on the efficacy and acceptability of the different types of face mask in preventing respiratory infections during epidemics is sparse and contested. But covid-19 is a serious illness that currently has no known treatment or vaccine and is spreading in an immune naïve population. Deaths are rising steeply, and health systems are under strain. This raises an ethical question: should policy makers apply the precautionary principle now and encourage people to wear face masks on the grounds that we have little to lose and potentially something to gain from this measure? We believe they should.

Evidence and guidelines
Evidence based medicine tends to focus predominantly on internal validity—whether primary research studies were “done right”—using tools to assess risk of bias and adequacy of statistical analysis. External validity relates to a different question: whether findings of primary studies done in a different population with a different disease or risk state are relevant to the current policy question. We argue that there should be a greater focus on external validity in evaluation of masks.

A rapid search of the literature on the wearing of masks by the general public during epidemics or pandemics by a team at the University of Galway (E Toomey, personal communication, 29 March 2020) found five peer reviewed systematic reviews:

- An “empty review” published on 27 March 2020—that is, a review showing no randomised trials of masks so far during the covid-19 pandemic
- A 2011 Cochrane review covering physical interventions and including 67 studies (many of poor quality), in which the main relevant study was the 2009 trial described above
- A 2020 systematic review of face masks in influenza epidemics, which included standard surgical masks and respirator masks and found some efficacy of masks if worn by those with respiratory symptoms but not if worn by asymptomatic individuals.
- A 2010 systematic review of face masks in influenza epidemics, which included standard surgical masks and respirator masks and found some efficacy of masks if worn by those with respiratory symptoms but not if worn by asymptomatic individuals.
- A 2007 systematic review and expert panel deliberation, which acknowledged the difficulties in interpreting evidence and stated: “With the exception of some evidence from SARS, we did not find any published data that directly support the use of masks . . . by the public.” The evidence from SARS was not set out in the paper (so we assume it was expert opinion on the panel).

Two further systematic reviews have since been released as preprints. Xiao and colleagues reviewed non-pharmaceutical measures for prevention of influenza. They identified 10 randomised controlled trials published between 1946 and 2018 that tested the efficacy of face masks (including standard surgical masks and commercially produced paper face masks designed for the public) for preventing laboratory confirmed influenza. A pooled meta-analysis found no significant reduction in influenza transmission (relative risk 0.78, 95% confidence interval 0.51 to 1.20; I²=30%, P=0.25). They also...
identified seven studies conducted in households; four provided masks for all household members, one for the sick member only, and two for household contacts only. None showed a significant reduction in laboratory confirmed influenza in the face mask arm. The authors concluded: “randomized controlled trials of [face masks] did not support a substantial effect on transmission of laboratory-confirmed influenza.”10

A preprint of a systematic review published on 6 April 2020 examined whether wearing a face mask or other barrier (goggles, shield, veil) prevents transmission of respiratory illness such as coronavirus, rhinovirus, tuberculosis, or influenza.11 It identified 31 eligible studies, including 12 randomised controlled trials. The authors found that overall, mask wearing both in general and by infected members within households seemed to produce small but statistically non-significant reductions in infection rates. The authors concluded that “The evidence is not sufficiently strong to support the widespread use of facemasks as a protective measure against covid-19”11 and recommended further high quality randomised controlled trials.

Contested interpretations

The heterogeneous and somewhat sparse primary literature described above has been inconsistently interpreted by policy makers. The World Health Organization, for example, recommends masks only for those with symptoms suggestive of covid-19, stating that masks should otherwise be reserved for healthcare workers.12 However, elsewhere WHO acknowledges that the wearing of masks by the general public has a place in severe pandemics, since even a partial protective effect could have a major influence on transmission.11

The US Centers for Disease Control and Prevention originally advised the public against wearing masks during the covid-19 pandemic, but this advice was updated on 4 April 2020 (box).16

None of the studies mentioned above tested the makeshift cloth masks that CDC has recommended. To our knowledge, there are no trials of cloth masks in the general public. A three arm trial of cloth masks versus surgical masks versus “standard practice” in preventing influenza-like illness in healthcare staff found that cloth masks were the least effective, but “standard practice” usually involved a surgical face mask and there was no true control arm with no masks.15

Various authors have justified not wearing masks on four main grounds. First, they claim that there is limited evidence that they are effective. Second, they argue that trials have shown that people are unlikely to wear them properly or consistently, which is important since prevention depends on people not repeatedly touching their mask, and on all or most people wearing them most of the time. Third, they point out that the trials cited above have also shown that wearing a mask might make people feel safe and hence disregard other important public health advice such as hand washing and social distancing.10

Finally, they argue that because of the shortage of masks in the current crisis, the public should not wear them since healthcare workers need them more, and public buying could lead to major supply chain problems.16

The first argument can be challenged on the grounds that absence of evidence is not evidence of absence. The second two arguments may have been internally valid in the trials that produced them, but we have no evidence that they are externally valid in the context of covid-19. “The public” here are not volunteers in someone else’s experiment in a flu outbreak—they are people the world over who are trying to stay alive in a deadly pandemic. They may be highly motivated to learn techniques for most effective mask use.

There are good reasons why the public is likely to comply more closely with mask advice and wider infection control measures now than the research participants were in the published trials. These reasons include the fact that SARS-CoV-2 is both more contagious and more serious than the medical scenarios in the studies on which the conclusion not to use masks was based.17 Similarly, if SARS-CoV-2 vaccination were available and affordable, it might be used more widely and be more acceptable than flu vaccination.

Substantial indirect evidence exists to support the argument for the public wearing masks in the covid-19 pandemic. The virus has been shown to remain viable in the air for several hours when released in an aerosol under experimental conditions,18 and such aerosols seem to be blocked by surgical masks in laboratory experiments.19 Individuals have been shown to be infectious up to 2.5 days before symptom onset,20 and as many as 50% of infections seem to occur from presymptomatic individuals.21 Community prevalence of covid-19 in many countries is likely to be high.22

### CDC advice on use of face masks by the general public

- Cover your mouth and nose with a cloth face cover when around others
- You could spread covid-19 to others even if you do not feel sick
- Everyone should wear a cloth face cover when they have to go out in public—for example, to the grocery store or to pick up other necessities
- Cloth face coverings should not be placed on children under age 2 or on anyone who has trouble breathing or is unconscious, incapacitated, or otherwise unable to remove the mask without assistance.
- The cloth face cover is meant to protect other people in case you are infected
- Do not use a face mask meant for a healthcare worker
- Continue to keep about 6 feet (2 m) between yourself and others. The cloth face cover is not a substitute for social distancing

There is a moral argument that the public should be given the opportunity to change their behaviour in line with the precautionary principle

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25 April 2020

[the bmj]
Modelling studies suggest that even a small reduction in community transmission could make a major difference to demand elsewhere in the system (eg, for hospital bed space and ventilators). The suggestion that the public should not wear masks because healthcare workers need them more is valid up to a point, but it is surely an argument for manufacturing more masks, not for denying them to populations who could potentially benefit from them. Until such masks are available in sufficient numbers, cloth masks (washed frequently) as recommended by the CDC (box) may be a substitute.

Additional research is urgently needed to identify how best to overcome problems of poor filtration and moisture retention that have been described. Such studies could determine, for example, the optimum nature of fabric, thickness (how many layers?), the nature of the outer water repellent layer, closeness of fit, and duration to be worn before washing.

**Precautionary principle**

Anecdotal evidence is rightly viewed as methodologically suspect, but as we contemplate using the precautionary principle, we should not ignore such evidence entirely. We should, for example, take account of the high rates of infection (and substantial mortality) among healthcare and other frontline staff in settings where there are shortages of masks compared with settings where these staff were better and more consistently protected. We might come to regret dismissing as anecdote the story of a choir practice with 60 people, of whom 45 are known to have developed covid-19 and two so far have died. Some indirect evidence for the benefits of masks is emerging. For example, a longitudinal ecological study from Hong Kong, conducted before and after the introduction of a range of non-pharmaceutical measures including masks for the public, suggested that these seemed to help to contain the pandemic (changes were significant for masks and social distancing measures combined, though the effect of masks alone cannot be isolated out). There is also analogical evidence from the behaviour of viruses with a similar chemical make-up. Given these indirect and circumstantial findings and the seriousness of this outbreak, there is a moral argument that the public should be given the opportunity to change their behaviour in line with the precautionary principle, even when direct, experimental evidence for benefit is not clear cut. Unlike in Australia and the US, where most trials were done, mask wearing has become normalised in some Asian countries, partly as a protection against polluted air and perhaps also as a response.

London Underground passengers have adopted face masks despite the lack of conclusive evidence

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to the SARS and MERS outbreaks. In Japan, Hong Kong, South Korea, and China, for example, mask wearing is now the norm. Another argument for using the precautionary principle is that the world may pay a high price for covid-19 and the “collateral damage” risks becoming higher than the direct damage from the virus. The dangers include increased suicide rates because of isolation and economic hopelessness among poorer people losing their income or in small companies, civil unrest in some countries when they consider lockdown, as was seen with Ebola, people losing their access to their regular medication, thriving autocratic systems under the pretence of controlling covid-19, and domestic violence and family disputes—the list is long. There are, of course, important counterarguments, including the possibility of a false sense of security and reduction in compliance with other infection control measures.

We propose two hypotheses that we believe should be urgently tested in natural experiments. The first is that in the context of covid-19, many people can be taught to use masks properly and will do this consistently without abandoning other important anti-contagion measures. The second is that if political will is there, mask shortages can be quickly overcome by repurposing manufacturing capacity—something that is already happening informally.

In conclusion, in the face of a pandemic the search for perfect evidence may be the enemy of good policy. As with parachutes for jumping out of aeroplanes, it is time to act without waiting for randomised controlled trial evidence. A recently posted preprint of a systematic review came to the same conclusion.

Masks are simple, cheap, and potentially effective. We believe that, worn both in the home (particularly by the person showing symptoms) and also outside the home in situations where meeting others is likely (for example, shopping, public transport), they could have a substantial impact on transmission with a relatively small impact on social and economic life.
Covid-19: should the public wear face masks?

Yes—population benefits are plausible and harms unlikely

When covid-19 became a global health emergency, there was a visible contrast between the responses of citizens in east Asia and the rest of the world. In east Asia, wearing of masks was ubiquitous, and sometimes mandated by governments. In Europe and North America, concerned citizens were repeatedly told that masks were not recommended for general use.

Now, increasing numbers of agencies and governments, including the Czech Republic and the US Centers for Diseases Control and Prevention\(^1\) are advocating that the general population wears masks, but others, such as the World Health Organization and Public Health England are not. In a linked article Greenhalgh and colleagues argue in support of the public wearing masks on the basis of the "precautionary principle".\(^2\) So, what is the evidence? And what might be the downsides?

Transmission dynamics of SARS-CoV-2

Maximal viral shedding of SARS-CoV-2 (the cause of covid-19) occurs early in the course of the illness.\(^3\) Patients may be contagious before they develop symptoms or even know that they are infected. Transmission of SARS-CoV-2 by asymptomatic individuals has been clearly documented, and mathematical models suggest that 60-80% of transmission events occur from people who are presymptomatic or asymptomatic.\(^4\)\(^5\) Sneezing and coughing may not be necessary; we know that patients with influenza shed substantial titres of infectious virions during normal breathing.\(^6\) Together, these data support the idea that seemingly well individuals may represent a substantial risk for onward transmission.

Healthcare workers usually wear masks to protect themselves from patients with respiratory infections. At the population level, wearing of masks by infected individuals may be more important, helping to retain contagious droplets, aerosols, and particles that can infect others and contaminate surfaces. Indeed, surgical masks substantially reduce emissions of influenza and (common cold) coronaviruses in exhaled breath.\(^7\)

Most studies in the real world have focused on the effectiveness of masks in preventing the transmission of influenza. Despite some positive results, several reviews (summarised by Greenhalgh and colleagues)\(^2\) as well as a recent meta-analysis\(^8\) found no significant protection from either face masks or enhanced hand hygiene. Many studies in these reviews were underpowered, and most failed to measure adherence. In one cluster randomised trial, adherence to mask wearing significantly reduced risk of influenza-like illness, but under half of participants wore masks most of the time.\(^9\)

Adherence is likely to be higher during a serious pandemic, and modelling of an influenza pandemic suggested that substantial numbers of cases may still be prevented even if masks are only 20% effective at reducing transmission.\(^10\)

In theory, wearing masks could instil a false sense of security and reduce adherence to other respiratory hygiene and social distancing measures. Likewise, contamination may occur when removing masks with imperfect technique. In practice, however, we don’t counsel against other non-pharmacological interventions with similar levels of evidence,\(^9\) just in case they instil a false sense of security. And, as with recent handwashing campaigns, mass education about the safe use and removal of masks would be possible.

Cloth masks

One real concern is the shortage of medical grade face masks for frontline healthcare workers, for which evidence of efficacy is more robust.\(^11\) For the general population, attention has therefore shifted to the use of makeshift or cloth masks. Although good quality evidence is lacking, some data suggest that cloth masks may be only marginally (15%) less effective than surgical masks in blocking emission of particles, and fivefold more effective than not wearing masks.\(^12\)

Therefore, cloth masks are likely to be better than wearing no mask at all. Much remains unknown about the usefulness of population level mask wearing in the context of the covid-19 pandemic. Nonetheless, unlike stringent isolation and social distancing measures, which have substantial societal and economic costs, mass manufacture and use of cloth masks is cheap and easy, and may even facilitate economic activity.

Greenhalgh and colleagues argue that, given the gravity of the pandemic, indirect evidence of benefit combined with the low risk of harm should outweigh the absence of direct evidence supporting mask wearing by the general public.\(^2\) We agree. Wearing a mask in public may become the face of our unified action in the fight against this common threat.

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Find the full version with references at http://dx.doi.org/10.1136/bmj.m1442

\(^{1}\) ANALYSIS, p 109

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**Editors’ note**

We are continually updating our understanding of the clinical and public health impact of SARS-CoV-2. For the latest information: http://bmj.com/coronavirus

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**Editors’ note**

For full references see BMJ 2020;369:m1442

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**Authors’ note**

All authors have completed the ICMJE uniform disclosure form, and declare: no support from any organisation for the submitted work: no financial relationships with any organisations that might have an interest in the submitted work in the previous 3 years: no other relationships or activities that could appear to have influenced the submitted work

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**Editorial note**

1. The editors’ guidance on using masks is based on expert opinion and current evidence regarding the risk of transmission of SARS-CoV-2.


3. WHO. https://www.who.int/health-topics/coronavirus#tab=tab_1


**LETTER OF THE WEEK**

**“Steady the front line! There is no retreat from here”**

We have previously felt uneasy about healthcare workers being described as “frontline staff” (Editor’s Choice, 4 April). The front line suggests to us a tangible risk of harm or death at work. No longer. NHS staff are dying of covid-19 acquired from patients.

Many UK health workers have said that they lack personal protective equipment (PPE). Overseas data indicate that good PPE might reduce risk of death.

During and after the 2003 Gulf war, British soldiers thought that they were deployed with inadequate equipment. It was generally thought that the chancellor had blocked funding it. Many soldiers thought that the “military covenant” was broken by the government.

Soldiers might go to war, but they won’t accept avoidable injury or death without good reason. The NHS risks similar perceptions with covid-19.

NHS staff accept the difficulties but worry about PPE and testing. Speedy diagnosis for politicians is in contrast with how clinicians are being treated. PPE provision seems haphazard—many healthcare staff are buying their own masks. Health boards contradict intercollegiate advice on PPE. The Royal College of Nursing seems to suggest withholding care if nurses are worried.

Soldiers will put themselves in danger, because they believe that the cause is just and that their commanders are honest and share their fate. Good training, good kit, motivation, and discipline are essentials. The NHS should show it protects and values its staff in such crises.

We misquote Colin Campbell, who at Balaklava in 1854 said to his men facing an overwhelming cavalry charge: “Needs be you must die where you stand.” They replied “Aye, Sir Colin. If needs be, we’ll do that.” Many died; the battle was won.

Leadership and a shared sense of purpose can make humans endure the impossible: the NHS should be stronger in many ways after covid-19. We hope that those in charge will listen to those who risk their lives and improve trust and cohesion.

Gordon Muir, consultant urologist, London; Jonathan Boff, senior lecturer in modern history, Birmingham

Cite this as: BMJ 2020;369:m1540

**PROTECT HEALTHCARE WORKERS**

**Be honest about resource shortages**

Healthcare workers are acutely aware of the regional and international differences in personal protective equipment (PPE) guidance and practice (Editor’s Choice, 4 April).

The greatest source of anxiety is not the disagreement between guidance, but the communication of decisions. Those issuing guidance need to be transparent in explaining their decision making. This is especially true in the event of pragmatic guidance being issued because of a specific resource shortage.

Healthcare workers understand the realities of this unprecedented global situation and will do their best within these constraints to care for their patients. Simply saying that a geographical region should have different PPE without justification is deeply unsettling for staff.

If healthcare workers think that they are being given guidance informed by resource shortages under the pretext of being data driven, this will undermine trust between expert bodies and frontline staff. Maintaining trust is fundamental to our success in this epidemic.

Eoin D O’Sullivan, medical registrar, Edinburgh

Cite this as: BMJ 2020;369:m1507

**Keep older staff off the front line**

Even with appropriate personal protective equipment, coronavirus infections will occur (Editor’s Choice, 4 April). Clearly, the greatest risk factor for serious illness and death is increasing age. Being male also seems to be a risk factor.

Compared with people in their 20s or 30s, those of us in our 50s or 60s have a likelihood of death from covid-19 that is an order of magnitude higher. In Italy, most of the 74 doctors who have died were in their 60s, and only four were women.

In light of this, the NHS should ensure that only younger doctors, nurses, and other staff are “patient facing.” Older staff should recognise their inherent risks and be prepared to let the next generation take the front line whenever possible.

John Ashcroft, GP, Ilkeston

Cite this as: BMJ 2020;369:m1511

**COVID-19: VENTILATOR NEED**

**Explicit rationing of ventilators**

Why aren’t we being more explicit about the problems around ventilators (This Week, 28 March)? Italy warned us. NICE continues to develop its response. I don’t have definitive “answers,” but I led the first explicit rationing of health services in England. Some of the lessons I learnt might be helpful:

- Explain the policy clearly—to patients, families, communities, clinicians, and the press.
- NEJM suggests that a volunteer group make disputed decisions. These volunteers must be protected too.
- Include lay people in decision making.
- Handle the media (social and other) properly. Get it wrong and problems will continue through the inevitable inquiry.

Caroline Mawer, retired public health consultant and urgent care GP, London

Cite this as: BMJ 2020;369:m1542
OBITUARIES

Roger Cull
Consultant neurologist and neurophysiologist (b 1947; q Edinburgh 1971; PhD, FRCP), died from prostate cancer on 26 February 2020
After house jobs Roger Cull was a Medical Research Council fellow and did his PhD on the rat synapse. He was clinical lecturer at the National Hospital, Queen Square, in 1979-81 and then returned to Edinburgh as a consultant neurologist. In 1996 he changed to neurophysiology and retired in 2005. His main interests were migraine and epilepsy, and he published numerous articles and book chapters. Outside medicine Roger’s passions were his family, photography, and jazz. A brilliant pianist, he played in many groups. Churg-Strauss syndrome and mononeuritis multiplex stopped his playing and led to a period as an inpatient on his own ward. Dexterity returned, and Roger continued to perform until a few months before his death. He leaves his wife, Liz; two daughters; two stepsons; and nine grandchildren.

Cite this as: BMJ 2020;368:m1225

Edward Williams Hughes
Consultant physician (b 1921; q 1945; MD, FRCP), died from old age on 16 August 2019
After qualifying Edward Hughes (“Eddie”) was diagnosed with pulmonary tuberculosis. He spent nearly two years in a sanatorium and was treated with a phrenic nerve crush. In 1947 he became part time TB officer to Caernarvonshire and Anglesey. In 1953 he was appointed medical superintendent at Tehidy Hospital in Camborne and in 1965 consultant physician to the West Cornwall Clinical Area. He was at various times chair of the joint Tuberculosis Committee of the British Thoracic Association, vice president of the British Thoracic Association and secretary, then president, of the West Country Chest Society. He retired in 1984. His hobbies included painting, photography, piano playing, gardening, DIY, and golf. He was a month away from his 98th birthday when he coughed out, as he himself would have put it. Predeceased by his wife, Lesley, Eddie leaves three children. David Levine, David Gibbons, Michael Winterton

Cite this as: BMJ 2020;368:m1224

Gordon Alexander Dyce Lavy
Consultant general surgeon (b 1924; q 1948; FRCS), died from old age on 22 November 2019
Gordon Alexander Dyce Lavy was born in Nablus, Palestine. He was educated at Seaford College and moved on to study medicine at Emmanuel College, Cambridge, and St Bartholomew’s, London. After house jobs he did his deferred national service in the New Zealand navy during the Korean war; he earned three medals and was eligible for two more. In 1955 he married Patricia Ward, a Barts nurse. From 1959 to 1965 Gordon went to Uganda, working as a general surgeon at Mengo Hospital in Kampala. In 1965 the family returned to the UK and he took a job as a lecturer in Aberdeen before being appointed consultant general surgeon at Pembury Hospital in Tunbridge Wells in 1967. He leaves Pat, his wife of 64 years; seven children; 23 grandchildren; and five great grandchildren.

Cite this as: BMJ 2020;368:m1223

John Richard Pogmore
Consultant obstetrician and gynaecologist
Birmingham Women’s Hospital (b 1942; q Barts, London, 1966; FRCOG), died from adult respiratory distress syndrome on 10 March 2020
On leaving the Royal Air Force, John Richard Pogmore moved to University Hospital Nottingham as lecturer and was involved in developing a new method of laparoscopic sterilisation. In 1979 he was appointed consultant at Selly Oak Hospital in Birmingham and Sorento Maternity Hospital. In 1995 he moved to the Birmingham Women’s Hospital, continued his medical interests, and contributed his natural administrative skills to the management team. His contributions to the Royal College of Obstetricians and Gynaecologists were considerable. He was chairman of the hospital recognition committee and an ex officio member of the council. He leaves his wife, Trina; two sons; and a granddaughter.

Cite this as: BMJ 2020;368:m1221

John Thompson Rowling
Honorary consultant general surgeon (b 1921; q Cambridge 1946; FRCS Eng, MD), died from old age on 27 July 2019
John Thompson Rowling (“JTR”) was born in Leeds into a family whose medical connections dated back to Elizabethan times. He undertook his clinical training in Leeds and took his finals in Cambridge. His first jobs after qualifying were in the Leeds area. Subsequently he enrolled for national service in the Royal Army Medical Corps, reaching the grade of major. Rowling was a very astute clinician and a versatile surgeon who was comfortable operating in any region of the body. He was aggressive and ahead of his time in the management of malignancies and introduced the use of perioperative chemotherapy and of the isolated infusion of chemotherapy into the liver. He was also a pioneer in endovascular surgery. His wife, Elizabeth Roberts, predeceased him in 2005. They did not have any children.

Cite this as: BMJ 2020;368:m1220

Patricia Joy Stuart
General practitioner Park Surgery, Great Yarmouth (b 1931; q Leeds 1955; FRCGP), died from a metastatic thymoma on 25 November 2019
Patricia Joy Stuart had to fight a school that did not teach chemistry to girls to get to medical school. There she met David Stuart; they married and went into practice together in Great Yarmouth, and were both very early GP trainers in the 1960s. She had an interest in paediatrics and was area surgeon for St John Ambulance. Patients appreciated her honest but sympathetic manner, and she remained “Dr Pat” to most of Great Yarmouth throughout retirement. When given her diagnosis in 2013, she said: “Well at least I am not going to die of something common.” After her diagnosis, she travelled to 25 countries across three continents and remained involved in many local societies and charities until recently. She leaves three children and three grandchildren.

Cite this as: BMJ 2020;368:m1219
OBITUARIES

Leslie Brent

Junior member of the “holy trinity of immunology”

Leslie Baruch Brent (b 1926; MBE), died from multiple infections on 21 December 2019

As a doctoral student at University College London, Leslie Baruch Brent was the co-discoverer of acquired immune tolerance with his department head, Peter Medawar, and a doctoral researcher, Rupert Billingham. Their work underpinned research in the area for decades. The three were dubbed the “holy trinity of immunology,” and their work underpinned research in the area for decades. The groundbreaking paper, “Actively acquired tolerance of foreign cells,” was published in Nature in 1953, the same year as Watson and Crick’s discovery of DNA.

After jointly winning the Nobel prize in 1960 with the Australian immunologist Frank Macfarlane Burnet, Medawar shared his prize money with Brent and Billingham and wrote: “I wish to make it absolutely clear that it is in no way a present but comes to you as of right.”

In another act of generosity, Medawar, with Billingham, invited their young protégé to give the first talk on their work in 1953 to the Society for Experimental Biology. Photographs of adult white mice with healthy brown skin grafts astonished the packed hall.

In 2013 the Transplantation Society celebrated the Nature paper’s anniversary by inviting Brent to repeat his 1953 talk, calling it “probably the most important paper in the history of transplantation.”

In 1956 the trinity published their extended findings in Philosophical Transactions of the Royal Society, the world’s first science journal. In 2015 their work featured in an analysis of 18 of the most influential papers in the journal’s 350 year history.

Life and career

Brent’s dazzling career included four years as professor of zoology at the University of Southampton and 20 years as professor of immunology at St Mary’s Hospital, London. He encouraged the first research on HIV/AIDS by Tony Pinching and established the University of London’s first masters course in clinical immunology.

Born Lothar Baruch in Köslin, Germany, Brent was forced to leave school in 1936, aged 11. Hoping to shield him from persecution, his parents put him into a Jewish orphanage in Berlin—a lifesaving decision. Three weeks after the infamous Kristallnacht (Nazi attacks in November 1938 that foreshadowed the Holocaust), Brent was on the first Kindertransport bringing young Jewish people to safety in Britain. Unbeknown to him for many years, the Nazis murdered his mother, father, and sister.

In a stroke of extraordinary good fortune, he attended Bunce Court, a progressive German-Jewish boarding school in Kent, where fellow pupils included the painter Frank Auerbach, the musical humourist Gerard Hoffnung, and the theatre critic and playwright Frank Marcus, author of The Killing of Sister George.

When he was 16, the charity funding him ran out of cash. He became a chemical laboratory assistant and studied part time. Two years later he volunteered for the Royal Warwickshire Regiment. Selected for officer training, he was told to change his name. The Germans would have executed him for treason and being Jewish if he had been captured. Wanting to keep his original initials, he chose Leslie after the actor Leslie Howard and Brent from the phone book. The reintroduction of Baruch came later.

Brent served in Italy and with the British Army of the Rhine. On discovering the fate of his family, he had brass commemorative plates set in the pavement outside their former home.

Research

Demobbed in 1947, Brent studied zoology at the University of Birmingham, where he became president of the students’ union. He was student of the year, although he narrowly missed a first, and also a leading sportsman. Medawar, his zoology professor, invited him to do a doctorate.

Brent remained in good health into his 90s. His hundreds of publications include A History of Transplantation Immunology (1996) and Sunday’s Child (2009), a thought provoking memoir.

Brent worked with the Association of Jewish Refugees to highlight the role that the Kindertransport played in saving his life and to campaign on current policy on refugee children in the UK. He was awarded an MBE in the 2020 New Year’s Honours List “for services to Holocaust education and the field of immunology and organ transplantation.”

His hobbies included walking, climbing, film, theatre, and singing. His first marriage, to Joanne Manley, ended in divorce. He leaves Carol Martin, a psychotherapist, whom he married in 1991; three children from his first marriage; three stepchildren; and nine grandchildren.

Cite this as: BMJ 2020;368:m977

John Illman, London
john@jicmedia.org