The issue of doctors’ pay is once again under the spotlight. The profession remains divided over how important pay is, debating whether the proposed 1% pay rise is just another kick in the teeth.

To put this into context, doctors’ pay has failed to keep pace with inflation for successive years, to the extent that we are now facing a 7% pay cut in real terms over the past 10 years.

And it’s not just pay that has been eroded. The current NHS pension offering is about half of what it used to be pre-2012, and many of the perks that doctors used to enjoy—such as free hospital accommodation and free parking— are also long gone. The doctors of today are facing a very different financial reality from the generation that went ahead of us, especially once you take into account the amount of debt that many younger doctors have accrued, having also paid eye watering amounts for their tuition fees.

But does pay really matter that much? Shouldn’t we take solace in the fact that we do an important and well respected job, with now even a George Cross to show for it? And even taking the real terms pay cut into account, a starting salary of £82 000 for hospital consultants is more than double the average UK salary. So, why are we so dissatisfied?

Just like everyone else, we are hard wired to compare ourselves with others—and it’s not the general population that we tend to compare ourselves with. Doctors starting out at consultant level can’t afford the luxuries that consultants a generation before them could. As for those of us who live and work in big cities, many of our friends outside medicine work in the corporate sector, and once you start comparing wages, bonuses, and benefits, it’s not difficult to see how doctors can end up feeling hard done by.

However, given the state of the economy and the debt that the country has accumulated during the pandemic, I suspect that anything more than a 1% pay rise is simply not on the cards. No matter how much we may feel worthy of it, the government is not going to be reaching into the public purse to top up our wages if it can help it.

And as the NHS is a monopoly employer, with doctors unlikely to leave the profession on the basis of pay and with unions having to tread carefully so as not to lose public favour, the reality is that doctors are going to have to reset their aspirations around pay and lifestyle—and to stop looking to the past when making pay comparisons.

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The link between case numbers and growth rate is important

Although the concept of exponential growth is not new to the public consciousness, a lot of misconceptions surround the idea. Exponential is often incorrectly used as a byword for rapid or large. It doesn’t have to be either of those. In fact, this is what’s so deceptive about exponential growth—when it starts it doesn’t look fast at all.

When the delta variant first arrived in the UK, its week-on-week rise was small. On 20 March 2021, just two cases were sequenced by the covid-19 genomic consortium (COG-UK). A week later it was 18—still small numbers, seemingly nothing to worry about. By 1 May COG-UK sequenced 735 cases of the delta variant, accounting for 12% of all sequenced cases. Although these were a fraction of the cases spreading in the community, the trend was clear. Sequenced cases were doubling every week. By that point it was too late to stop its spread. The delta variant now comprises 99% of all sequenced cases in the UK.

But what, precisely, is exponential growth and why is it relevant to epidemics? The mathematical definition says that a quantity that increases with a rate proportional to its current size will grow exponentially. This means that as the quantity increases so does the rate at which it grows. The more infected people there are, the more people they will infect, and the faster the cases will rise.

In March 2020, cases in the UK were thought to be doubling around every three and a half days. If this were true, locking down just a week earlier would have meant entering lockdown with a quarter of the cases. Tens of thousands of lives would have been saved.

Reproduction number
When a disease spreads through a largely susceptible population, we can characterise its growth using the reproduction number, $R$. $R$ tells us the number of new infections each infectious person might expect to seed during the course of their infectious period. If $R$ is below 1 then cases will fall, but if $R$ is above 1, then cases will rise—exponentially.

Sadly, this is the situation we are in again as covid spreads through the younger, largely unvaccinated population. In the UK, $R$ is currently estimated to be between 1.2 and 1.5. This suggests that the number of cases is growing by 3.7% a day.

That we will see a huge third wave is explicitly acknowledged by the government. Sajid Javid, the health secretary, expects to see 100 000 cases a day in the summer, despite its modelling subcommittee suggesting that from the start of April to early June the case-to-hospital admission rate stayed approximately constant and if this continued, exponential growth in cases would lead to exponential rises in hospital admissions. While it is likely the link between admissions and cases will continue to weaken as we vaccinate more, we can still expect to see rises in admissions, which puts pressure on a stressed NHS. Indeed, we are seeing admissions start to accelerate, with more than 500 new admissions a day with a week-on-week rise of over 55%. Although deaths are at relatively low levels (compared with January) they are creeping upwards, growing 43% in the last week.

Of course, hospital admissions and death are not the only metrics against which to judge the more infected people there are, the more people they will infect, and the faster cases will rise not being able to put a figure on the resultant levels of hospital admissions. This has been rationalised by suggesting the link between cases and admissions has been broken.

While vaccines have weakened the link, they have not broken it. SAGE and its modelling subcommittee suggested that easing restrictions would condemn to prolonged ill health not being able to put a figure on the resultant levels of hospital admissions. Thousands of young people are being condemned to prolonged ill health not being able to put a figure on the resultant levels of hospital admissions. This has been rationalised by suggesting the link between cases and admissions has been broken.

While vaccines have weakened the link, they have not broken it. SAGE and its modelling subcommittee suggested that easing restrictions would put pressure on a stressed NHS. Indeed, we are seeing admissions start to accelerate, with more than 500 new admissions a day with a week-on-week rise of over 55%. Although deaths are at relatively low levels (compared with January) they are creeping upwards, growing 43% in the last week.

Of course, hospital admissions and death are not the only metrics against which to judge
the impact of increased case numbers. Higher rates will disproportionately affect younger unvaccinated people who have already lost so much. Not only will children suffer further educational disruption, but we risk creating a generation affected by chronic health problems. Deprived communities, who are disproportionately affected by covid, will continue to be disadvantaged by the “freedom day” strategy. On top of this, allowing high levels of transmission in a partially vaccinated population increases the risk of vaccine resistant variants.

The one mathematical consolation is that nothing can grow exponentially forever. Eventually, when enough people gain immunity (provided there are no immune evading variants), the virus will be denied the contacts it needs to spread. But why we would try to achieve these high levels of immunity through natural infection, is beyond most people’s comprehension.

Further unlocking on 19 July risks accelerating the unmitigated spread of the virus, posing an exponential threat to the health and wellbeing of a nation.

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Thousands of predominantly young, active people are being condemned to prolonged ill health and disability every day. As well as putting considerable pressure on the NHS, their reduced capacity to work will further contribute to the impact long covid is already having on society and the economy.

Long covid has been barely mentioned in the roadmap out of lockdown—it has also been almost completely absent from public messaging. People are now being asked to take responsibility for their own safety and “exercise good judgment,” but many do not realise the extent of the risk they are taking when exposing themselves to this virus. There may not be a perfect time to lift all restrictions, but the time is certainly not now.

Ondine Sherwood, founding member, LongCovidSOS

ACUTE PERSPECTIVE David Oliver

Beds were lacking long before covid

As we approach the planned end to most covid-19 restrictions in England, our general hospitals remain under unprecedented midsummer pressure, even though beds occupied by people with covid are still way below peak pandemic levels. Bed capacity was a glaring problem for the NHS well before covid, and even with no more surges in infections it will remain a huge limiting factor to our system’s performance.

Between 2010-11 and 2019-20 England’s overall number of NHS hospital beds fell by 11%, from 144,455 to 128,943. The number of available general and acute beds fell by 8%, from 110,568 to 102,194.

Population growth, ageing, and the accompanying frailty, disability, and long term conditions all drive activity and demand in health and social care. Despite a pressing need to tackle health inequalities, deprivation, and wider determinants of preventable non-communicable disease, it’s fanciful to think we’ll reverse the need for hospital care in the foreseeable future.

Overnight bed occupancy was around 90% before the pandemic and exceeded that in serial pre-covid winters. We must be cautious in interpreting pandemic figures, because infection control measures and emergency discharge arrangements cut the number of beds available, enabled faster clearance of beds, and led to elective work being postponed so occupancy fell below historical levels.

Last month, however, emergency department attendances in England reached an all time high for June, at over 2.1 million, with 407,000 admissions to beds (up 21% on 2020 and 8% on 2019) and waits for over 12 hours rose sharply.

The NHS also faces the longest waiting list for elective appointments since 2007—over five million people—growing by more than 600,000 in the past three months. These waits are often for procedures requiring beds for overnight stays or day case admission. Occupancy is back above 90% in many places, and some hospitals have declared formal capacity alerts.

We could debate evidence about the optimal bed occupancy needed to avoid inefficiencies and overheads from empty beds and whether the 85% sometimes quoted is the right figure. We could discuss whether we have enough staff to look after any extra beds as we face a workforce crisis.

We could explore the wisdom of acute “hot” and elective “cold” care in the same facilities so seasonal pandemics, outbreaks, and acute demand affect planned care. We could also argue the case for more capacity outside hospital and a greater focus on prevention. But remember that public health and social care budgets have suffered sustained cuts since 2010, and in that time the number of people receiving home support has fallen, with care home places flatlining. We have also seen static GP numbers and district nursing numbers fall.

I’m not convinced politicians or NHS leaders are listening or learning from the history of cuts in bed numbers.

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It’s fanciful to think we’ll reverse the need for hospital care in the foreseeable future
How’s your appetite for risk?

People vary in their appetite for risk. Some people’s idea of fun is paragliding or rock climbing, whereas I’d opt for a gentle jog followed by a good book. In my spare time I can enjoy the luxury of control over how much risk I take, and although I may sometimes feel anxious about the choices of others, I generally support their right to choose.

That degree of control doesn’t extend to all spheres of our lives, where we often depend on the actions of others for our safety. No matter how carefully I drive, this won’t protect me from injury if a tired lorry driver nods off at the wheel—something that may become more likely after the relaxation of driving regulations proposed this week.

The suggestion that people’s behaviour regarding covid-19 is a matter of personal appetite for risk, after the planned removal of restrictions next week, is dangerously wide of the mark. It assumes that people have a far greater degree of control over their exposure than they really do. I’ve modified my risk by being vaccinated, which will make me less likely to become severely ill or infect others in my household. However, the risk is reduced, not negated: this distinction has been made very clear by the experience of a colleague who has been admitted to hospital with covid-19 despite being fully vaccinated.

I’m lucky in that I don’t need public transport to travel to work, I spend my days in a well ventilated building, and I can insist that others there wear masks. Not everyone has those freedoms and choices, and if they’re immunosuppressed and therefore unable to mount a good response to the vaccine, they rely on the actions of others to keep them safe. The rising numbers of cases and the increased transmissibility of the delta variant put this group in a very difficult position. The new health secretary has suggested that such patients should ask their GP for advice, but I’m not sure what I should tell a shopworker or bus driver taking methotrexate. I can’t be precise about their degree of risk, nor the effect on their income or employment if they decide to stay at home once the majority of covid restrictions are gone.

However ruggedly individualistic your politics, a pandemic really does bring home how reliant all people are on those around them for their safety and health. SARS-CoV-2 is airborne, and a mask protects others far more than it protects the wearer. Unfortunately, not everyone understands this, and some will have little consideration for the vulnerability of others, although the government insists that guidance on mask wearing will remain. We need to keep the rules on mask wearing in indoor spaces and on public transport, and ensure that the messaging is clear, if we want to avoid a further spike in admissions and the deaths of vulnerable patients.

A pandemic brings home how reliant people are on others for their safety and health.

Imposter syndrome

Valerie Young, author and co-founder of the Impostor Syndrome Institute, joins this Sharp Scratch podcast to discuss the syndrome in medicine. She starts by defining what it is:

“There are a lot of misconceptions about what it is and what it isn’t. Let me tell you what it’s not first—it’s not a fancy term for low self-esteem. Think of self-esteem as this kind of global sense we have about ourselves, but imposter feelings are very specific to achievement arenas: work, school, business, career.

“The term was coined in 1978 by two psychologists and what they found is that despite evidence of our abilities or accomplishments, a lot of perfectly capable, competent, intelligent people feel they have somehow fooled other people. They externalise their accomplishments, they chalk them up to luck or timing or computer error, and there’s this persistent sense they’re going to be found out.”

Culturally aware support

The latest Wellbeing podcast updates listeners on a fund that’s been set up to provide psychological support to medical students and doctors who are from a black African, mixed race, or Caribbean background. Dammie Oluwabawale, medical student and grants and partnerships manager at Melanin Medics, talks about some of the reasons doctors from this heritage may need tailored support:

“The BMA commissioned in-depth research to understand the risks for poor wellbeing. They found that doctors from ethnic minorities were twice as likely to be affected by discrimination at work—they were at increased risk of bullying and harassment from colleagues and patients. Medical students from a black, Asian, or minority ethnic background experienced greater levels of undermining behaviour, microaggressions, and harassment, which in turn has an impact on one’s self-confidence and one’s self-perception.”

Listen and subscribe to The BMJ podcast on Apple Podcasts, Spotify, and other major podcast apps

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

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South Asia was one of the first regions to be exposed to SARS-CoV-2 through travellers in January 2020. However, the subsequent epidemic profile of COVID-19 in the region varied considerably, as it did in Africa. After an initial rise, cases plateaued in all countries of South Asia except India, where the pandemic led to a steady rise in cases and deaths until the autumn of 2020. Pakistan received praise for its early response to COVID-19 and the organisation of a systematic health systems and social sector response. After a relative quiescent period countries in South Asia, especially India, faced a big upsurge in cases and deaths in the spring of 2021, possibly related to the SARS-CoV-2 delta variant.

The region faces additional challenges. The economic downturn in India is both massive and unprecedented, with consequences for poverty and food insecurity. Although Pakistan was able to launch a massive and successful early cash transfer scheme to blunt the effects of the lockdown on the poorest 16.9 million people, it has limited fiscal space left to provide the additional $1.5bn (£1bn) needed for continued support.

After 18 months of intermittent lockdowns, limited mobility, school closures, and economic contraction, there is understandable fatigue with lockdowns and business and school closures. Despite the availability of several effective COVID-19 vaccines, global rollout remains fractured and vastly inequitable, with 13 countries accounting for 80% of the roughly two billion doses administered by the end of May 2021. The spread of variants with increased risk of transmission, coupled with widespread vaccine hesitancy, now threatens to upend much of the recent gains in COVID-19 response.

**KEY MESSAGES**

- Countries in South Asia seemed to have escaped the worst of the pandemic until spring 2021
- Complacency about disease severity and mitigation measures may have contributed to recent rises in infection
- Lack of good governance, weak health systems, and pandemic planning also exacerbated the problem
- Effective civic engagement and equitable vaccination are key to containing the threat in the long term

### Understanding the diversity of COVID-19 epidemiology and response in South Asia

Zulfiqar A Bhutta and colleagues compare the reaction to the coronavirus in nine countries and consider what is needed to contain COVID and manage future pandemics.

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<th>Comparison of COVID-19 epidemiology and response</th>
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<td>We reviewed the global COVID-19 epidemic profile in South Asia and other global regions based on publicly available databases. We defined global patterns of the pandemic by classifying the reported peaks of cases and deaths in three sequential phases depending on observed patterns (irrespective of any subjective interpretation as “waves”) and compared various population based indicators (testing rates, case load, and deaths per million population).</td>
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We have previously described the early organisation of oversight and control of COVID-19 in Pakistan in some detail, and now expand this analysis broadly to compare the COVID-19 response across several countries of South Asia. We also included Iran in the comparison because of its robust registration systems for vital statistics and availability of information from an early stage of the pandemic. Strict lockdowns were fully in place across South Asia by the end of March 2020 and still continue in some countries.

### How robust are the data?

The figure details the trends in testing and positivity rates since March 2020 for several South Asian countries plus Iran, and the table compares these rates over the three phases of the pandemic. These show that testing rates increased overall between phase 1 and 2 of the pandemic, with a weekly average of 900-4000 tests per million population across South Asia. Although higher than in countries from South East Asia, Latin America, and sub-Saharan Africa, this testing rate is still several folds lower than rates in North America and Europe. The variability in rates of testing in South Asia is related to limited facilities, costs, and access. To illustrate, Pakistan has mainly relied on the gold standard imported polymerase chain reaction (PCR) tests for SARS-CoV-2 detection in nasal or nasopharyngeal swabs and has already spent over $2.5bn (£1.8bn; €2.1bn) on testing, far exceeding some annual provincial health budgets. India has relied on locally developed low cost rapid antigen detection tests for over 60% of its testing capacity.

Given relatively low rates of testing, doubts have been expressed about the veracity of COVID-19 mortality data from South Asia and Africa, as no countries have a registration system in place to record births and cause of death. However, many countries put in place specific systems to capture COVID-19 deaths. In Pakistan the infrastructure of the polio surveillance programme was adapted for COVID-19 reporting, and a mortality reporting system was established with standardised data entry systems across 494 public and private sector hospitals covering all regions.

Some systematic under-reporting of COVID-19 related deaths is, however, likely, as in high income countries, and it has been estimated to be as high as 7.1 million. But the mortality capture gap in 2020 is unlikely to have been massive in South Asia. The same data capture systems have diligently reported the upsurge in cases and deaths during the third phase of COVID-19 across the region with corresponding immense pressures on health systems.

Although reporting systems may not have captured the full magnitude of COVID-19 associated mortality in phase 1 and 2 of the pandemic, they do permit reasonable trend analyses. Over the past year COVID-19 related deaths remained much lower in South Asia except India, where the pandemic led to a steady rise in cases and deaths until the autumn of 2020.

The spread of variants with increased risk of transmission, coupled with widespread vaccine hesitancy, now threatens to upend much of the recent gains in COVID-19 response.

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Asia than in the US, UK, and Europe. Africa has also had relatively low death rates from covid-19. Although the reason for this remains unclear, it could be partly related to a relatively younger population with lower levels of comorbidities that increase the risks of deaths from covid-19.

Other intriguing, although unproved, hypotheses underlying the low case fatality rates in South Asia and Africa in 2020 relate to factors such as innate immunity and exposure to other strains of coronavirus. Other trends in testing and positivity rates for covid-19 in five South Asian countries and Iran

The disastrous upsurge of cases in India in spring 2021 is now recognised to be related to the emergence and spread of the delta variant

Caution should be exercised in interpreting population serosurveillance studies, however, as they may be confounded by variable laboratory methods, with many assessments based on total antibody estimates as opposed to neutralising antibodies. Population prevalence studies between May and June 2020 using ELISA tests revealed very low population weighted seroprevalence in India (0.73%, 95% confidence interval 0.34% to 1.13%). Tests using a commercial electrochemiluminescent automated immunoassay in low and high transmission neighbourhoods of Karachi in June 2020 showed 8.7% (5.1% to 13.1%) and 15.1% (9.4% to 21.7%) prevalence, respectively. By contrast, targeted studies in slum populations of Mumbai in June and July 2020 showed that 54.1% (adjusted range 55.1-61.4%) of people tested were positive for antibodies compared with 16.1% (range 12.0-18.9%) among non-slum dwellers. Comparable seroprevalence trends were seen in Bangladesh. The disastrous upsurge of cases in India in spring 2021 is now recognised to be related to the emergence and spread of the delta variant (B 1.617.2), considered 50% more infectious than the more common alpha variant (B 1.1.7) first identified in the UK. With caseloads having risen across other South Asian countries such as Nepal, Afghanistan, and Bangladesh,
What have we learnt?

The first lesson for South Asian countries, as for other low and middle income countries, is that covid-19 is unsparing and complacency can be disastrous. The fact that the region was spared the worst of mortality in 2020 despite a moderate case load, led to widespread disregard of social distancing and mask use. India saw massive attendance, exceeding 3.4 million people, at the annual religious festival Kumbh Mela on the banks of the River Ganges, and the farmers’ strike in Punjab with widespread congregation.

A case study estimates a 14-16% increase in child and maternal mortality, important effects on undernutrition, and 400 000 extra adolescent pregnancies of protesters also lasted months. In Pakistan serial political rallies and mass demonstrations became the norm after September 2020 and were accompanied by a sense of victory over the pandemic, premature as it turned out. It is unclear if a similar upsurge of covid-19 awaits Africa.

However, South Asia must learn to live with the pandemic. There is little appetite for renewed restrictions given the considerable secondary effects of the stringent mitigation measures on the economy as well as maternal and child health and nutrition services. Children are probably the least recognised victims of the crisis globally. While schools in Pakistan reopened intermittently after a prolonged closure, they closed again in the recent upsurge. For some of the youngest children this has meant complete interruption of learning and schooling for over a year with potential long term consequences. A recent case study of the indirect effects of covid-19 in South Asia estimates a 14-16% increase in child and maternal mortality, important effects on undernutrition, and 400 000 extra adolescent pregnancies given the estimated 4.5 million girls dropping out of schools.

The third lesson, learnt the hard way, is the need for good governance and pandemic planning. Health authorities in Delhi took far too long to set up a supply chain for oxygen and field hospitals to increase capacity to care for the sick. Key medications for patients in hospital with covid-19 disappeared from pharmacies to be sold on the black market at exorbitant rates, and often to ambulatory patients least in need. These recognised pressure points could have been predicted and avoided.

Unfortunately, other South Asian countries seem to have learnt vital lessons to avoid a virtual collapse of the health system, as seen in India. All countries experienced problems with communication and transparency during the chaos in the early phase of the pandemic. These were soon overcome in Iran in 2020, but have remained a notable feature of other dysfunctional governments dealing with high burden of covid. Covid-19 can be controlled only with patience and by winning over hearts and minds of the people. As our recent analysis of the response to covid-19 in the Islamic world suggests, the most successful responses were not among the authoritarian regimes but countries with effective civic society engagement, open dialogue, and stable democracies.

Perhaps the single largest risk for a continued covid-19 crisis in South Asia is the abysmal vaccination strategy in the region. India implemented an intense vaccine diplomacy initiative with donations to all strategic neighbours (except Pakistan), but given the massive domestic burden of infections, reneged pledges to the global Covax facility. The supply and pace of vaccinations has not kept up with the spread of covid-19 in any low or middle income country. A large increase in global finances will be needed to support and enhance Covax, which given limited supplies also poses enormous ethical challenges for targeting in recipient countries.

With current half-hearted mitigation measures and covid-19 fatigue, this pandemic could impact development forever to come. We need stable democracies, intense vaccine diplomacy, and by winning over hearts and minds of the people. As our recent analysis of the response to covid-19 in the Islamic world suggests, the most successful responses were not among the authoritarian regimes but countries with effective civic society engagement, open dialogue, and stable democracies.

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**BMJ OPINION** Karl J Friston and Anthony Costello

We should shift our covid-19 focus from mortality to morbidity, particularly in children

We have heard much about how vaccination is breaking—or weakening—the link between SARS-CoV-2 and the clinical manifestations of covid-19. We consider the nature of this link from the perspective of quantitative modelling—and what it means for risks following exposure to the virus. In brief, it suggests we should shift our focus from mortality to morbidity, particularly in children.

The modelling question is dynamic causal modelling (DCM) of viral transmission, which combines conventional epidemiological models with agent based behavioural modelling to quantify how viral spread affects behaviour (such as social distancing and self-isolation)—and how behaviour affects viral transmission (such as through fluctuating contact rates and transmissibility).

For the past six months, DCM estimates and long term forecasts have been released weekly: everything has unfolded largely as expected, until the past few weeks. Hitherto, DCM could explain the prevalence of infection and subsequent hospital admissions (and deaths) with ease. It was, however, unable to explain the recent rises in notification rates (new daily tests) and symptoms (as assessed by the KCL-Zoe model). In short, under a model that best explains the first waves, there appears to be an unexplainable excess of notifications and symptomatic cases: about twice the number one would anticipate, given vaccination levels and subsequent waves, there appears to be a more expressive model that best explain the recent increases in notification and death rates—as a response to unlocking and increased transmission risk because of the delta variant—that does not translate into systemic illness and/or fatalities.

Quantitatively, current efficacy estimates—that best explain a wide range of data—are as follows: efficacy of preventing infection, 13.3% (95% confidence interval 7.4 to 18.9); efficacy of preventing transmission, 84.8% (CI 82.0 to 87.2); efficacy of preventing serious illness when symptomatic, 61.1% (CI 58.3 to 63.6); efficacy of preventing death when seriously ill, 93.2% (CI 91.6 to 94.5).

This construction raises the question, where does vaccination enter the game? Vaccination could preclude infection, transmission, serious (systemic) illness when symptomatic, or death when seriously ill. When these links are included in the DCM, one sees evidence for an effect of vaccination at all four points in the chain. As one might anticipate, this more expressive model explains the recent increases in notification and death rates—as a response to unlocking and increased transmission risk because of the delta variant—that does not translate into systemic illness and/or fatalities.

Vaccination has a very small effect on the risk of becoming infected and subsequently symptomatic

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The remarkable aspect of these estimates is that vaccination has a very small effect (7.4% to 18.9%) on the risk of becoming infected and subsequently symptomatic—despite providing substantial protection against severe illness and death. In terms of personal risk, this means it may be wise to consider yourself at the same risk of contracting coronavirus when doubly vaccinated as prior to vaccination—even though you are less likely to be admitted to hospital or die.

At population level, this suggests the profile of symptoms could shift away from the symptoms associated with systemic illness and towards those symptoms associated with a predominantly mucosal infection. Indeed, there is anecdotal evidence to suggest that this is the case.

While this is good news in terms of mortality, there remain three reasons for concern. First, our estimate of the efficacy of preventing serious illness when symptomatic is only 61%. This suggests that the NHS could still face a surge in hospital admissions when restrictions are lifted entirely on 19 July, given that less than 60% of the UK population will be fully vaccinated at that time.

Second, vaccination in the presence of high community transmission increases the opportunity for new variants to emerge, which may have different profiles of symptoms, transmissibility, virulence, and vaccine escape.

Vulnerable populations

Third, the most vulnerable populations that are unprotected by vaccination are the poorest groups, and all children under the age of 16. The US Centers for Disease Control (CDC) estimates more than 22 million children aged 5-17 have been infected, with 155 deaths among children aged 0-4 (1 in 29 000 cases) and 316 deaths in the 5-17 years age group (1 in 68 000 cases).

In terms of childhood morbidity, in the UK, multisystem inflammatory syndrome in children occurs with a frequency of around 0.05% (1 in 2000). In the US, 4018 cases have been reported to the CDC with many others not counted. Perhaps most worrying is that the latest UK estimates for long covid in children aged 12-16 who experience prolonged symptoms (for at least a year) are 0.12% (0.06% to 0.17%) or 1 in 830, with possible but unknown effects on developing brain structure based on adult studies. Despite the low risk of myocarditis in vaccinated children, all of whom have recovered, the EU, Israel, the US, and other countries judge the benefit-risk ratio to strongly favour vaccination of older children. The UK is an outlier by leaving children unvaccinated at a time when lifting of restrictions will increase infection rates.

Karl J Friston, scientific director, Wellcome Centre for Human Neuroimaging

Anthony Costello, professor of global health and sustainable development, University College London

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This construction raises the question, where does vaccination enter the game? Vaccination could preclude infection, transmission, serious (systemic) illness when symptomatic, or death when seriously ill. When these links are included in the DCM, one sees evidence for an effect of vaccination at all four points in the chain. As one might anticipate, this more expressive model explains the recent increases in notification and death rates—as a response to unlocking and increased transmission risk because of the delta variant—that does not translate into systemic illness and/or fatalities.

Quantitatively, current efficacy estimates—that best explain a wide range of data—are as follows: efficacy of preventing infection, 13.3% (95% confidence interval 7.4 to 18.9); efficacy of preventing transmission, 84.8% (CI 82.0 to 87.2); efficacy of preventing serious illness when symptomatic, 61.1% (CI 58.3 to 63.6); efficacy of preventing death when seriously ill, 93.2% (CI 91.6 to 94.5).

The remarkable aspect of these estimates is that vaccination has a very small effect (7.4% to 18.9%) on the risk of becoming infected and subsequently symptomatic—despite providing substantial protection against severe illness and death. In terms of personal risk, this means it may be wise to consider yourself at the same risk of contracting coronavirus when doubly vaccinated as prior to vaccination—even though you are less likely to be admitted to hospital or die.

At population level, this suggests the profile of symptoms could shift away from the symptoms associated with systemic illness and towards those symptoms associated with a predominantly mucosal infection. Indeed, there is anecdotal evidence to suggest that this is the case.

While this is good news in terms of mortality, there remain three reasons for concern. First, our estimate of the efficacy of preventing serious illness when symptomatic is only 61%. This suggests that the NHS could still face a surge in hospital admissions when restrictions are lifted entirely on 19 July, given that less than 60% of the UK population will be fully vaccinated at that time.

Second, vaccination in the presence of high community transmission increases the opportunity for new variants to emerge, which may have different profiles of symptoms, transmissibility, virulence, and vaccine escape.

Vulnerable populations

Third, the most vulnerable populations that are unprotected by vaccination are the poorest groups, and all children under the age of 16. The US Centers for Disease Control (CDC) estimates more than 22 million children aged 5-17 have been infected, with 155 deaths among children aged 0-4 (1 in 29 000 cases) and 316 deaths in the 5-17 years age group (1 in 68 000 cases).

In terms of childhood morbidity, in the UK, multisystem inflammatory syndrome in children occurs with a frequency of around 0.05% (1 in 2000). In the US, 4018 cases have been reported to the CDC with many others not counted. Perhaps most worrying is that the latest UK estimates for long covid in children aged 12-16 who experience prolonged symptoms (for at least a year) are 0.12% (0.06% to 0.17%) or 1 in 830, with possible but unknown effects on developing brain structure based on adult studies. Despite the low risk of myocarditis in vaccinated children, all of whom have recovered, the EU, Israel, the US, and other countries judge the benefit-risk ratio to strongly favour vaccination of older children. The UK is an outlier by leaving children unvaccinated at a time when lifting of restrictions will increase infection rates.

Karl J Friston, scientific director, Wellcome Centre for Human Neuroimaging

Anthony Costello, professor of global health and sustainable development, University College London
LETTER OF THE WEEK

Public covid inquiry could shape response to third wave

Godlee says that it takes both time and hard work to regain lost trust (Editor’s Choice, 12 June). The prime minister has committed to preparing for a public inquiry into the pandemic next year, promising it will be fully independent and have “the ability to compel the production of all relevant materials and take oral evidence in public, under oath.”

The People’s Covid Inquiry, under the chairmanship of Michael Mansfield QC (above), has just finished hearing testimony from 41 people including experts such as Michael Marmot and David King, as well as citizen witnesses. These are now available through the inquiry website, and summary recommendations and a detailed report will be available in the coming months.

It is clear, however, that public health measures are still urgently needed if community transmission is to be eliminated and further restrictions prevented. These must include adequate support for those testing positive or asked to isolate and optimising ventilation in schools and workplaces. There are important lessons to be learnt now rather than after the next election when some recommendations may no longer be relevant.

Many recent inquiries (Al-Sweady, Chilcot, Saville) have taken up to 12 years to produce a final report. This is too slow to shape the government’s response to the developing third wave of this pandemic or to ensure that further surges from new variants are avoided.

An independent and judge led statutory public inquiry with a swift interim review would yield lessons that can be applied immediately. Interim findings of the Taylor inquiry into the Hillsborough football stadium disaster were delivered in 11 weeks, allowing safety measures to be introduced ahead of the next football season. It can be done—and surely this is the least that is owed to all those who have been bereaved.

John Puntsis, consultant paediatrician, Leeds; Tony O’Sullivan, retired consultant paediatrician, London

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MASK RELATED ACNE

Alternative PPE for facial dermatoses

Evidence relating to facial dermatoses associated with PPE has been limited during the pandemic (Practice Pointer, 12 June), but these associations have previously been well recognised and quantified.

One element missing from the Practice Pointer was consideration of alternative types of PPE that offer similar protection but less risk to the skin of the wearer. Facial skin contact with PPE might be avoided by using powered air purifying respirators. “Exacerbation from a warm, moist occlusive environment around the face” is likely to be significantly ameliorated by these respirators or by filtering facepiece respirators (such as FFP3) fitted with an exhalation valve, after an appropriate risk assessment.

Before the pandemic, substitution interventions had been shown to reduce the incidence of dermatoses associated with PPE, and similar initiatives are possible now.

Raymond M Agius, emeritus professor of occupational and environmental medicine, Manchester

Cite this as: BMJ 2021;374:n1693

Advice for healthcare workers

Mask related acne and other facial dermatoses summarised by Rudd and Walsh are big problems for healthcare workers. Dermatologists at our trust treated around 800 healthcare workers over 10 weeks.

Using oil based moisturisers to prevent PPE induced pressure damage seems to be comedogenic when combined with prolonged mask wearing. Our healthcare workers spent a mean 9.5 hours per shift wearing masks; commuting meant that many were wearing masks for 12 hours a day. Advice on the use of oil-free moisturisers and good skin cleansing is helpful.

Post-inflammatory dyspigmentation can be a problem for people with more pigmented skins, who often are unable to tolerate benzoyl peroxide and topical retinoids. This is important in the NHS as 10.7% of healthcare workers are of Asian and 6.5% of African heritage. Acne spots in people with more pigmented skin might last only a few days, but the dark marks left on the face can last months and are cosmetically disabling.

Portia Goldsmith, consultant dermatologist; Jing Gao, specialist registrar in dermatology; Shefali Rajpopat, consultant dermatologist; Rebeca Goiriz, consultant dermatologist, London

Cite this as: BMJ 2021;374:n1695

HOW TO REBUILD TRUST AFTER MISDIAGNOSIS

Where is the liaison between mental and medical?

Clark writes, “As I had received several psychiatric diagnoses, the pain team wouldn’t help with my physical pain” (What Your Patient Is Thinking, 29 May). As long as medical and mental services work in separate silos, patients with unexplained symptoms will be neglected. A good mental health liaison team will work with medical specialists so that the patient feels looked after by both.

We now know that mental content can have an effect in the body. But old assumptions live on. We are inclined, often subliminally, to see medical conditions as faults in the machine but mental disorders as subject to free will. Clinical teams must learn to speak each other’s languages. This is ethical medicine, requiring discussion and debate.

Clark was held responsible for her symptoms by the pain team. Once she had a diagnosis, she was treated differently, because it was no longer her fault, just her body’s.

Sebastian Kraemer, retired liaison psychiatrist, London

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Nigel Baber
Senior adviser to the clinical, pharmaceutical and biological sciences division, University of Hertfordshire (b 1945; q Birmingham 1969; FRCP, FFPM, FRCPe, DipClinPharm (Hon)), died from covid-19 pneumonia on 18 January 2021
Nigel Scott Baber (“Nigel”) was initially a hospital doctor, then a general practitioner, then a clinical pharmacologist—working for three of the world’s leading pharmaceutical companies for more than 20 years. Later he put his expertise at the service of the government, working as a medical regulator for several years. Before full retirement, Nigel was employed by the University of Hertfordshire as an expert in its biosciences division. He published widely and was on the editorial board, then the executive editorial board, and then the editorial management board of the British Journal of Clinical Pharmacology, where he held the post of reviews editor. Nigel leaves his wife, Caroline; two children; and two granddaughters.
Graeme Baber
Cite this as: BMJ 2021;373:n1071

Valerie Jill Everett
Consultant obstetrician (b 1929; q Royal Free Hospital, London, 1959; FRCOG), died after a fall on 2 January 2021
Valerie Jill Everett (“Jill”) joined the Uganda Medical Service before training in obstetrics in the UK. She returned to Uganda as a senior registrar at Mulago Hospital and then became head of obstetrics at Dar es Salaam in Tanzania. After several years she was offered the choice of the chairs at Khartoum University, Sudan, or in Papua New Guinea and chose the latter. On returning to the UK she was consultant at the South London Hospital for Women. She undertook work in the Philippines and Vietnam as a consultant for the World Health Organization and was a regular contributor to perinatal conferences in Sweden. Always an active individual, she regularly walked in remote areas and climbed mountains. She leaves her nieces, Jocelyn and Sara, and many close friends.
Jocelyn Everett, Harry Egdell
Cite this as: BMJ 2021;373:n1050

Archibald Stewart Hunter
Consultant paediatric cardiologist (b 1936; q Aberdeen 1960; DCH, FRCP, FRCPG, FRCPCH), died from dementia on 18 February 2021
Archibald Stewart Hunter became interested in children with heart disease and went on to develop one of the UK’s most outstanding children’s heart units, with echocardiography as a major diagnostic tool. He wrote 124 scientific papers and coauthored five books. In 1987 the first heart transplant in a baby in the UK was carried out in Newcastle. Hunter set up the Children’s Heart Unit Fund and was the founder and first president of the British Congenital Cardiac Society. He was a proud Scot, born in Comrie, where he met his future wife, Valerie. They retired to Gatehouse of Fleet in Galloway, where he became a church elder and indulged his passion for golf. They had 60 years of happy marriage with three children, all of whom survive him.
Alan Craft
Cite this as: BMJ 2021;373:n1044

Dilip Kumar Banerjee
Reader in medical microbiology and consultant medical microbiologist (b 1936; q Calcutta National Medical College, Kolkata, India, 1958; FRCPath), died from an acute aortic dissection on 13 January 2021
Dilip Kumar Banerjee was an eminent doctor, academic, and university teacher who spent his entire 34 year career in the UK, working at St George’s Hospital in London. He was internationally recognised for his work on leprosy and undertook tuberculosis research, investigating how mycobacteria interact with immune cells. His studies led him to try varied approaches—for example, using genetic fingerprinting to map the epidemiology of tuberculosis in London in the 1990s, which improved “track and trace” of the disease. His skills and attributes were fitting for our current times, long before our now pandemic aware society and world grasped their fundamental importance. Dilip leaves his wife, Kamlesh; two daughters; and three grandchildren.
Shrilla Banerjee
Cite this as: BMJ 2021;373:n1051

Arthur Walsh Hargreaves
Consultant general surgeon Salford Royal and Hope hospitals (b 1934; q 1960; FCRS (Edin), FCRS (Eng), FCRS (Glas)), died from pneumonia after a long battle with inclusion body myositis on 6 April 2021
Arthur Walsh Hargreaves met Jill, his future wife of 40 years, at Manchester University. He became a consultant general surgeon at Salford Royal and Hope hospitals in 1968, where he stayed for the remainder of his career. Arthur was a royal college examiner during the 1980s and 1990s. He was president of the Manchester Regional Association of Surgeons in 1984-85, after several years as secretary. He was also a council member of the Association of Surgeons of Great Britain and Ireland from 1989 to 1992. Elected to the Moynihan Chirurgical Club in 1974, he served as president in 1996. Jill (a consultant anaesthetist) predeceased him in 2001, and he leaves three children and four grandchildren.
Paul Hargreaves
Cite this as: BMJ 2021;373:n1048

Susan Claire Pritchard
GP (b 1964; q Birmingham 1991, BSc, FRCGP, DRCOG, DCH), died from sarcoma on 29 January 2021
After house jobs in Birmingham Susan Claire Pritchard (“Sue”) worked in Australia for two years before joining the Banbury GP training scheme. She became a much loved and respected partner in Shipston on Stour in 2000 and was dedicated to providing first class primary care to her patients. She also worked one day a week at Luther Street in Oxford providing primary care, friendship, and hope to homeless people. She was a committed trainer for many years, and it is a wonderful legacy she leaves behind, with GPs working throughout the world providing the holistic care Sue provided naturally. Sue was instrumental in Shipston being awarded “Outstanding” by the Care Quality Commission. Her outside interests included nature, theatre, walking, and travel. She leaves her husband, Michael; nieces and nephews; and friends.
Michael Booth, David Williams
Cite this as: BMJ 2021;373:n1043
OBITUARIES

Julian Leff
Innovator in the treatment of schizophrenia

Julian Paul Leff (b 1938; University College Hospital, London, 1958: MD, MRCP, RCPsych), died from posterior cortical atrophy on 23 February 2021

If anyone was born to be a radical, it was the polymath Julian Leff, one of the most creative psychiatrists of his generation, and a pioneer in the treatment of schizophrenia and in the development of social and cultural psychiatry. He also studied silk screening, ceramics, sculpture, and silver smithing.

Family background
His communist father, Sam, was one of the NHS founders and author of The Health of the People (1950) and The School Health Service (1959). His mother, also a communist, the novelist Vera Levy, was one of the three founder members of the Campaign for Nuclear Disarmament. Sam and Vera met on the Jarrow March in 1936 when some 200 hungry, foot sore men in their Sunday best walked some 300 miles from the north east to Hyde Park, London, to highlight the misery of poverty, overcrowding, poor housing, and high mortality.

Born above his father’s surgery in Archway, north London, Leff inherited from his parents a deep rooted conviction about the fundamental importance of family and environment on mental health. Like many Jews, he was preoccupied by the trauma of dislocation on families. The seven generation family memoir he wrote in retirement described how in the 1880s his maternal great grandfather, Marcus, fled Lithuania to avoid conscription into the Russian army. Planning to join his brother in Scotland, the frightened boy mistakenly ended up in Leeds instead of the port of Leith because of his lack of English. A synagogue welcomed him, but he was in an alien city and culture, far from home and unable to return.

Marcus’s story highlights the drivers of Leff’s career: concern over family, heritage, migration, and culture. There is nothing unusual about a man who looks back in retirement, but Leff also looked forward—his visionary flair remained as sharp as ever.

New schizophrenia treatment
In 2012 he developed a novel treatment in which patients with schizophrenia create computer avatars of their own voices, enabling them to talk back to their hallucinations. In October 2020, a team at King’s College, London, received £3.7m from Wellcome to extend the evaluation of avatar therapy and to assess the feasibility of making it available throughout the NHS.

In 2013, after a pilot trial, Leff explained, “We record every therapy session on MP3 so that the patient essentially has a therapist in their pocket to whom they can listen at any time when harassed by the voices. We’ve found that this helps them to recognise that the voices originate within their own mind and reinforces their control over the hallucinations.”

After medical school and house jobs at University College London and the Whittington Hospital, north London, Leff worked from 1972 to 2002 at the Institute of Psychiatry, London. Leff later became professor of social and cultural psychiatry and director of the Medical Research Council’s social and community psychiatric unit.

On joining the unit at the age of 30, he became the British representative in an international research project of the World Health Organization, comparing schizophrenia in nine countries.

The University of Cape Town made him an honorary professor after he had taken part in a comparative outcome study in apartheid South Africa.

Between 1985 and the start of the 21st century Leff brought a new impetus to care in the community, the biggest political change in mental healthcare in the history of the NHS. The postwar push towards community care started in the 1950s, but progress had been slow.

As director of the Team for Assessment of Psychiatric Services from 1985, Leff led a team of 50 to assess the national policy of replacing psychiatric hospitals with community based services. The programme included a comprehensive study into the emotional and social effects of moving some 1500 patients from two large psychiatric hospitals into community homes—some had been in hospital for 60 years or more. The team reported that more than 80% of them wanted to stay in their new community homes.

Leff’s nine books included Care in the Community: Illusion or Reality (1997).

In other acclaimed work, Leff treated schizophrenia with pioneering individual and group work, seeing families instead of just the patient alone. In his 2001 book, The Unbalanced Mind, he declared, “My vision for the future of psychiatry is one that depends not on technical advances in making images of the brain or replacing bad genes with good ones, but on increasing our understanding of relationships between people.”

Leff leaves his second wife, the psychoanalyst Joan Raphael-Leff; and four children.

John Illman, London
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Cite this as: BMJ 2021;372:n831