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October 31, 2022

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The Independent Scientific Advisory Group for Emergencies (SAGE)

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## **The Independent SAGE**

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### **Myths about COVID-19: Where's the truth?**

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## 12 MYTHS ABOUT COVID-19: WHERE'S THE TRUTH?

We're now approaching the end of the third year of the pandemic but many people are still pretty confused about what the key facts are. This is partly because there are a lot of myths circulating on social media, in the newspapers and on TV. Some of these myths have their origins in genuine ignorance or confusion (misinformation) and some are spread deliberately with intent to deceive (disinformation). On 7th October, Independent SAGE ran a special live streamed [‘myth-busting’ session](#) for the public to address some of the common misconceptions about the virus which are currently circulating. Here are some of the highlights from that session.

### MYTH 1: ‘COVID-19 is just a cold’

What makes a cold “just a cold” is that there’s a *balance* between our immunity, the virulence and changeability of the virus, and also our environment (if we’re taking medicines that might affect our immunity, for example). Our immunity as a population is generally stable; the cold viruses aren’t as inherently dangerous and they don’t change very much – but that’s simply not the case with SARS-CoV-2 (also commonly referred to as ‘coronavirus’: the virus that causes COVID-19). SARS-CoV-2 is continuing to change (so much that scientists are now talking about “variant soup”); it has some inherently virulent features that make it a very dangerous virus indeed in certain circumstances; and our immunity against infection is changing depending on how recently we’ve had our vaccines and boosters and whether the ones we had are effective against any new strains. If our immunity doesn’t keep pace with the virus as it changes, the balance will be upset and we could see much more serious disease again. The nearest comparison with COVID-19 isn’t a cold, but perhaps pandemic flu a year or two after it emerged. One clear measure of COVID-19’s continuing severity is the number of deaths where it is mentioned on the death certificate (i.e. it contributed to the reason that person died). There have been over 40,000 COVID-19 deaths in England and Wales since September 2021 and over 26,000 in the nine months since January 2022. A typical year pre-pandemic, meanwhile, would see about 25,000 deaths from flu or pneumonia.

Unlike flu however, SARS-CoV-2 isn’t just a respiratory virus. It seems also to affect our blood vessels and other organs and of course it can lead to prolonged symptoms or Long COVID in quite a few people. Evidence is accumulating that SARS-CoV-2 has serious impacts on the cardiovascular system. The 12-month risk of cardiovascular diseases is much higher in COVID-19 survivors than people who have not had COVID-19. Serial heart MRI scans conducted in previously well people with mild initial COVID-19 illness suggest that these lingering cardiac symptoms may be explained, at least in part, by ongoing mild cardiac inflammation. Another important risk of catching SARS-CoV-2 is Long COVID with 2 million people reporting symptoms persisting at least four weeks, of which 1.4 million people are currently reporting symptoms going on for at least 12 weeks, a substantial minority of whom are severely affected.

Watch Steve Griffin’s response [here](#).

### MYTH 2: ‘COVID-19 is mild in children—and it may even be good for their immune systems to get it’

Although most children may indeed get milder infection than adults, it doesn't mean that all children have the same experience. Some children can experience severe infections. The more COVID-19 cases there are, the more children will suffer severe illness. In 2020 in England, there were over 3,000 hospitalisations in under 18s for COVID-19. This has risen to over 16,000 so far in 2022. Sadly, more than 100 deaths in children in England have been directly attributed to COVID-19 as of October 2022. At least 105,000 children and young people have reported having Long COVID in the UK four weeks after infection, of which 22,000 have reported symptoms for more than a year. A staggering 18,000 children and young adults report their activities are "limited a lot".

Another myth is that it's good for a child's immune system to encounter viruses. There is no advantage to be had from risking serious illness from infections. The cells of our immune system recognise only specific fragments of pathogens like viruses and, with our advanced understanding of immunology, we can design vaccines that use only small portions of the virus to educate the immune system and give the required immunity without risking catching an infection – just as we do for measles or polio.

The best way of protecting children and keeping them in school is to mitigate the risk of airborne infection spread by providing adequate ventilation in schools, masks at times of very high transmission and ensuring that children are fully vaccinated, as recommended for their age group.

Watch Sheena Cruickshank's response [here](#)

### **MYTH 3: 'Deaths with COVID-19 aren't deaths from COVID-19'**

There's a widespread belief that people are no longer dying of COVID-19, and that when 'COVID-19' appears on someone's death certificate, it's just because they happened to have the disease when they were dying of something else. This assumption is false. Whilst it's certainly possible to die *with* COVID-19 but not *of* it (for example, by getting run over on your way to the doctor's surgery), this would not appear on your death certificate. A death certificate is a legal document and the doctor who fills it out must state only the *cause of death*, including any condition that may have *contributed* to the death even if it wasn't the direct and immediate cause. So if COVID-19 is on someone's death certificate, this means it either caused their death directly or was a contributory factor.

Watch Dr Helen Salisbury's response [here](#).

### **MYTH 4: 'Long COVID is all in the mind'**

As things stand currently – and this may change – there is no one specific blood test or X-ray that will say for sure that someone has Long COVID, and we don't know why some people get it while others don't. But this doesn't mean the disease is imagined! It's a real condition caused by underlying virus-induced changes. Various research studies have shown changes in the immune system, hormonal changes (particularly in cortisol levels), micro-clotting and changes that can be seen in, for example, MRI scans of the brain. These changes have been shown in some but not all people with Long COVID, suggesting that more than one pathway may be involved. Research is also ongoing to tease out the underlying pathways linking persistence of the virus to persistence of symptoms.

Watch Trish Greenhalgh's response [here](#).

### **MYTH 5: 'Lockdowns didn't work to reduce transmission'**

There's a prevailing myth that lockdowns weren't really very effective and, what's more, they did more harm than good – for example by affecting people's mental health. People often cite Sweden as a country which didn't have an enforced national lockdown but did pretty well anyway. We need to look in a more nuanced way at what exactly was happening in different countries.

Sweden didn't have a national lockdown, but it had plenty of restrictions – people didn't just go about their lives as they had been pre-pandemic – but it's also true that Sweden had more than twice the death rate as its neighbour Norway which has a similar demographic. Some Asian countries (such as Japan and South Korea) showed that it was possible to avoid lockdown if you had other really effective public health mitigations: notably lots of testing and effective tracing and isolating of contacts; attention to air quality (e.g. ventilation); and strong public messaging about avoiding crowds.

There's no doubt that *lockdowns work* to prevent transmission (they're working now against Omicron in China), but they are disruptive and also cause harm. The UK (along with much of Europe) could have avoided repeated lockdowns if it had instigated the kind of public health mitigations that were effective in Japan and South Korea. The key to avoiding lockdown is to stop people mixing while they are infectious (through excellent testing, contact tracing and support for isolation), to minimise chance of transmission if they do (e.g. through clean air, masks and vaccination) and to reduce impact of infection (vaccination and treatments).

Watch Christina Pagel and Martin McKee's response [here](#).

### **MYTH 6: 'Vaccines are worse than the disease'**

Vaccines are overall very safe and much safer than having COVID-19. However, all medicines can have side-effects and vaccines are no exception. Nevertheless, to date, approximately 12.7 billion COVID-19 vaccines have been administered across 184 countries. During the Omicron era, vaccination with a booster has been shown to reduce the chance of hospitalisation and death by more than 90%. In early 2021, Israel was the first country to show that vaccines were bending the curve of COVID-19 infections. The country led the world in early vaccinations, and cases, hospitalisations and deaths declined rapidly. A similar pattern of vaccination and recovery has been repeated across dozens of countries.

So there's no doubt whatsoever that vaccines protect people from serious harms from SARS-CoV-2. The latest vaccine in use in the UK is bivalent—that is, it uses both the original coronavirus strain and the new Omicron strain to provide better protection.

In terms of side-effects from the vaccines, most people will either get no symptoms at all or a sore arm/cold-like symptoms for a day or two. There have also been more serious but very rare side-effects reported, such as allergic reactions from some types of vaccine. Another rare side-effect was observed with the viral-vectored vaccines. There was a risk equivalent to 2.5 extra cases per 100,000 vaccinations of developing small blood clots (also known as thrombosis with thrombocytopenia syndrome). This was most commonly observed in women

between the ages of 18-49 years old and is due to an autoimmune blood reaction to the viral vector that triggers a blood clotting reaction.

The side-effect most commonly discussed now is myocarditis which is usually mentioned within the context of the mRNA vaccines. Myocarditis is inflammation of the heart muscles (myocardium) that can cause chest pain, shortness of breath and rapid or irregular heart rhythms (arrhythmias). Here's some information on the risk of this condition post-vaccination:

It is reported that for every 1 million vaccine doses administered among males aged 16 to 29 years old, we can expect approximately 5-10 myocarditis events. In younger males aged 12 to 15, the risk is less than 5 per 100,000 vaccines administered. The risks in other age groups and females are much lower than this. The "background risk" of myocarditis (i.e., the risk of getting it from other viruses) is ~0.2 to 2.2 per 1 million infections. So there *is* a link between vaccines and myocarditis in younger males.

However, it's also true that the virus itself can cause myocarditis. The risk of myocarditis is 11 fold higher in the 28 days following a SARS-CoV-2 positive test. Other heart problems such as pericarditis and cardiac arrhythmias are also higher following a positive SARS-CoV-2 test.

Myocarditis, like any disease, is not all or nothing, ranging from no symptoms (asymptomatic) to severe. **Thankfully, myocarditis after the vaccine is relatively mild; only 2% of people have to go to intensive care and nearly all people fully recover.** There have been deaths where vaccination was implicated, but the causal link (i.e. whether it was caused by the virus or the vaccine) is still under investigation and unclear.

On the other hand, the severity of myocarditis after a virus infection is much higher; approximately 50% of people go to ICU, 25% do not fully recover, and 11-22% die.

### **MYTH 7: 'Vaccines affect your fertility'**

COVID-19 vaccines do not affect your fertility. The rumour seems to have been started from someone suggesting that when you immunise someone against COVID-19 you also immunise against a protein that's made in the placenta, risking antibodies then attacking the placenta and causing miscarriage. But the science behind this assertion is just wrong. Scientists have looked specifically for such placenta-targeting antibodies and couldn't find them. This theory has been comprehensively disproved. But unfortunately the rumour took hold and understandably many people are concerned.

There have been numerous studies addressing fertility in relation to COVID-19 vaccination. We know from the original trials that people were just as likely to get pregnant in the vaccine arm of the trial as the non-vaccinated group. Population studies in the USA have shown that over 37, 000 people reported post-vaccination pregnancies to the CDC by June/July 2021, of which 10,000 had had at least one dose of the vaccine with the other reports coming from people who had the full vaccine dose. A recent study in the USA (of more than 2,000 couples) published earlier in 2022 showed that COVID-19 vaccination did not reduce the chances of conception. Research investigating ovarian reserve in fertile volunteers before and after vaccination also showed no impact. So overall there is absolutely no evidence that the vaccine affects fertility.

Whilst the vaccine doesn't reduce fertility, infection with SARS-CoV-2 *is* associated with a short-term reduction in fertility in males. Importantly, catching the virus when pregnant increases the chance of going to intensive care, having an early birth and that the baby will also go to intensive care, so it's very important for pregnant women to be vaccinated.

Watch Sheena Cruickshank and Steve Griffin's response on vaccines [here](#).

### **MYTH 8: 'Boosters haven't been properly tested'**

The current boosters on offer in the UK are either the original vaccines or the new bivalent vaccine that contains information about an Omicron strain and the original COVID-19 strain. This was tested in phase 2 and 3 studies for efficacy and safety before being rolled out to the UK. Boosters have been **extensively** tested in clinical trials and we've seen at least a 1.5-fold increase in the levels of protective antibodies against the virus with the booster compared with the original vaccines. If your last vaccine dose was more than 6 months ago, your levels of antibodies will have fallen and its protective effects will be waning, so please book in for your next booster when called.

Watch Sheena Cruickshank's response on boosters [here](#).

### **MYTH 9: 'There's no robust evidence that masks work – and they may cause harm'**

Let's first unpack this word "robust". What people tend to mean in this context is there's no **randomised controlled trial** evidence that masks prevent infections in the wearer. That's not true – but we shouldn't conflate the word "robust" with randomised trials. There have been dozens of studies which show that if a high proportion of the population wears masks in indoor settings, fewer people get infected. Masking protects you – and it protects other people from your germs.

As most people know by now, SARS-CoV-2 is an airborne virus; we breathe it in and out. We need to acknowledge that no mask is perfect at removing viral particles from the air, although high-quality masks are pretty good. Masks graded as N95 (also called FFP2) for example, will filter out 95% of particles. N99 masks (also called FFP3) filter out 99%. The mask has to fit and you have to be wearing it – it doesn't work if it's in your pocket or in a drawer back home. But if you put it on and keep it on, it will work.

Now for the myth that masks cause harm. They don't! Masks do not kill you. They do not lower your blood oxygen levels. (I've done a randomised controlled trial on that one myself which I'm hoping will be published soon). They do not weaken your immune system. They do not cause major mental trauma in children, though it's certainly true that some kids don't want to wear them and I would never force a child to wear a mask. It's also true that if someone is claustrophobic, the mask can make them feel panicky. Some masks, particularly thick cloth masks, can make it hard to understand someone's speech, and that is particularly a problem for people with hearing difficulties who lip-read. We need to take seriously the needs of people who communicate by lip-reading, but that doesn't mean we should fall for the myth that masks are ineffective or cause a whole host of other harms.

Watch Trish Greenhalgh's response on masks [here](#).

## **MYTH 10: ‘We don’t need to ventilate indoor spaces – and it’s even possible to “overventilate” or “overfilter” air’**

There’s plenty of evidence that SARS-CoV-2 is airborne and that a very effective way to reduce transmission is to attend to the quality of the air. There’s nothing bad about fresh air, and in terms of air quality you can’t over-ventilate or over-filter. The Royal Academy of Engineering produced a [report](#) in June 2022 which made the clear and compelling case for cleaning the air. With water-borne diseases like cholera we need to make sure the water is clean; with airborne diseases like COVID-19 we need to do the same for the air.

Watch Trish Greenhalgh and Duncan Robertson’s response on air quality [here](#).

## **MYTH 11: ‘It’s either full lockdown or doing nothing’**

There are many things we can and should be doing now to protect ourselves or others from COVID-19. The two most important are getting vaccinated and ensuring safer air in indoor spaces. Where there is poor ventilation and no air filtration in indoor spaces, wearing masks significantly reduces transmission. The more that we do these things, the less the transmission and the more people can go about their everyday lives, including getting education, working and socialising. It also reduces the chance of new variants and hence the need for any future lockdowns or restrictions.

The 1992 Workplace (Health, Safety and Welfare) Regulations require provision be made for every enclosed workplace to be ventilated by a “sufficient quantity of fresh or purified air”. We should hold employers to this and the Government to enable this to happen.

We expect safe drinking water wherever we go – in workplaces, restaurants and pubs, leisure facilities etc. Why not clean air? Two reasons:

1. The UK Government has shown no commitment to investing in ventilation and filtration systems in public and shared indoor spaces, as has happened in other countries.
2. The UK Government has been spreading the myth that “it is all over, business as usual, nothing to see here”.

The government’s ‘say nothing/do nothing campaign’ has had its desired effect – to spread complacency amongst the general public, so they are largely unaware of how widespread COVID-19 is, how much damage it is causing and of the simple things they could do to protect themselves and others. This is helped by a general psychological process called ‘threat minimisation’ – a way of thinking about threats that minimises their severity or likely impact on you. People may be more likely to believe the narratives that the pandemic is over, or going away, or getting milder or doesn’t harm ‘people like me’. People are more likely to think like this if they are not aware of, or engaged in, the simple, practical measures that can reduce the threat e.g. opening windows, wearing masks in poorly ventilated spaces.

If people are given clear information about their risks and how to manage them, and empowered to act to reduce risks, they are likely to engage with behaviours that will reduce risks. But it requires everyone to do their part – Government and employers, as well as citizens.

Watch Susan Michie’s response [here](#).

## **MYTH 12: ‘COVID-19 isn’t ever going to go away so we might as well give up’**

We don’t give up and “live with” measles or TB or HIV. It’s difficult to eradicate (wipe out completely – so far we’ve only managed that for smallpox) or eliminate viruses (wipe out locally for long periods of time – we’ve managed this often with measles and polio) once they’ve taken hold in a population, but that doesn’t mean we should give up trying. Currently 400 Americans are dying every day from COVID-19 – it’s now the second most common cause of death there. In the UK more than 200,000 people have lost their lives and Long COVID is affecting almost 2 million people. Medicine is about prevention and treatment of diseases that kill and maim us. Good, sensible public health must not be shouted down by libertarians. The economic impacts of the pandemic are partly due to lockdowns but much of the impact is due to the **disease itself**. We should have implemented more effective public health measures at the outset and with each successive wave. We can’t simply ignore the ongoing threat.

Watch Anthony Costello’s response [here](#).



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