Coronavirus: 'Deadly masks' claims debunked

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This week, face masks became mandatory on public transport in England, and changes to the use of face coverings in hospitals were introduced.

The BBC's anti-disinformation team has been investigating misleading claims about the health risks of face masks.

Here is a look at some of the most widely seen examples on social media.

No evidence of harmful carbon dioxide exposure

Most people won't find masks very comfortable, but this article is looking at claims that wearing them is actually dangerous.

A diagram taken from Wikipedia showing the "symptoms of carbon dioxide toxicity" has been re-edited and shared thousands of times on Facebook.
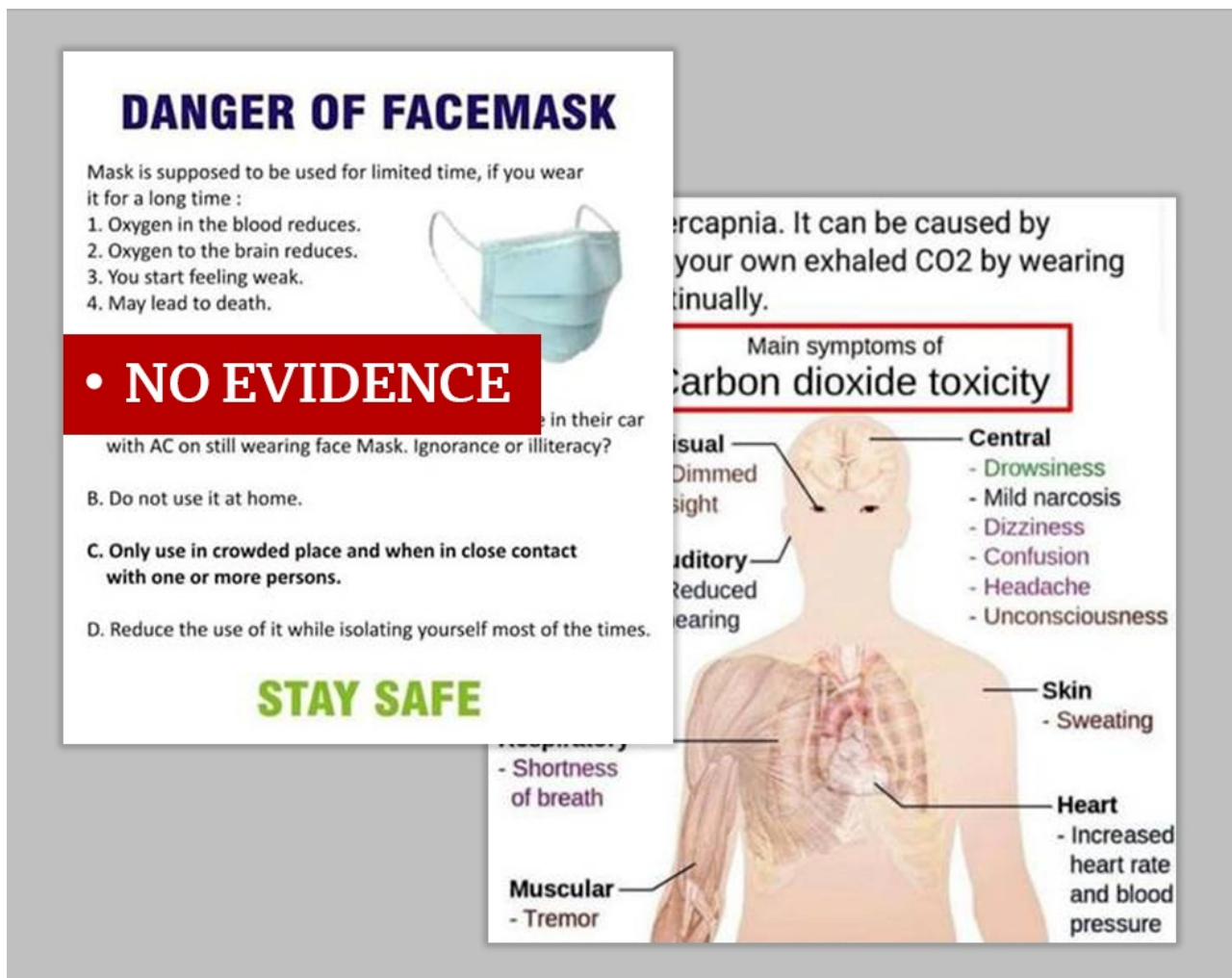
The modified version claims that wearing a mask leads to "re-breathing your exhaled CO2".

People have attached the image to comments under BBC News articles about the new rules.

We've seen lots of posts alerting people to this potentially harmful side-effect - called hypercapnia - where there's too much carbon dioxide in the blood.

But it's highly unlikely you'll suffer it wearing a cloth or gauze face mask.

"This simply won't happen unless there is an air-tight fit and you rebreathe your air," says Prof Keith Neal, an infectious disease expert.

Carbon dioxide molecules are tiny - far smaller than droplets containing coronavirus which the masks are designed to stop - and won't be trapped by a breathable material, particularly during relatively short periods like a bus journey.

When you breathe out, the carbon dioxide will go through and round the mask.

Surgeons regularly wear much heavier-duty face coverings all day without coming to harm.

"There have been reports of some medics developing headaches linked to wearing personal protective equipment for long periods of time, but it's still highly unlikely they would suffer from some of the more extreme effects of carbon dioxide toxicity," says Rachel Schraer, BBC Health reporter.

The World Health Organization (WHO) says masks could provide "a barrier for potentially infectious droplets" in areas where "physical distancing of at least one metre is not possible".

Home-made cloth face coverings can help reduce the spread from people who are contagious but have no symptoms or are yet to develop symptoms. Read more from the BBC's Michelle Roberts on why we're asked to wear masks in some settings.

"I would rather die of coronavirus than wear a mask"

The question of whether or not to wear a mask has been polarising opinion in the United States for weeks.

Some states and local governments have legislated to make wearing face coverings in public places compulsory, and some stores have introduced their own policies requiring shoppers to wear masks. This has led to a debate online about civil liberties.

Plandemic, a viral conspiracy video full of false claims about coronavirus, included an assertion that wearing a mask "literally activates your own virus", when there is no evidence to support this claim. This led to Facebook removing the video from its platform when it went viral in May.

Former professional baseball player Aubrey Huff this week vented his anger about being required to wear a mask, in a video on Twitter, which was viewed 1.6 million times. In it, he claims: "It's not healthy to breathe in your own CO2 all the time", but as we've seen there's no evidence that wearing a face covering causes you to breathe in more CO2.

He concludes: "I would rather die from coronavirus than to live the rest of my life in fear and wearing a damn mask".

Opponents of mandatory mask legislation are protesting against lawmakers' decisions. Last week, the LA Times reported that a public health official resigned from her role after mandating masks in public places in Orange County, California. Protesters created posters of her with a Hitler moustache and swastikas, and she was on the receiving end of what was interpreted as a death threat.

Some people who dispute the need for masks claim the pandemic is either a hoax or exaggerated, despite the hundreds of thousands of deaths worldwide.

A meme that has been widely shared on US Facebook groups since mid-May asks why we are distancing, if masks work. The easy answer is that neither method gives the population full protection, but having both can help limit the spread of the virus.

The meme then goes on to conclude; "Because it's not about the virus. It never was." However, new requirements to wear masks are certainly related to the coronavirus pandemic and efforts to stop the spread of the virus. One example of the meme from a conservative Latino Facebook page has been shared 26,000 times.

Masks won't deprive body of oxygen

Another theme in misleading posts surrounding the use of masks is that they limit the amount of oxygen getting into the body.

One graphic titled "danger of a face mask" says this "may lead to death".

But the breathable materials recommended for face masks worn properly won't inhibit your breathing.

Breathlessness is a sign that your body is deprived of oxygen - known as hypoxia.

"Thin paper or cloth masks will not lead to hypoxia. Surgeons operate for hours wearing them. They don't get these problems," says Prof Neal.

The WHO says: "The prolonged use of medical masks when properly worn, does not cause CO2 intoxication nor oxygen deficiency.

"While wearing a medical mask, make sure it fits properly and that it is tight enough to allow you to breathe normally. Do not re-use a disposable mask and always change it as soon as it gets damp."

These oxygen-depleting claims have appeared in many different languages: English, German, Serbian and Hebrew Facebook posts alongside the same stock image of a toddler in a mask.

An article on a Nigerian news site, originally translated from Spanish, carried the claim back in April and has been shared 100,000 times.

There are some situations in which face masks might not be advised:

- children under two whose lungs haven't fully developed
- people with respiratory conditions who may struggle to breathe
- people should not wear masks when exercising