

The Biggest Mistake of the Pandemic Is Still Haunting Us

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We're now being left to choose our own risks when it comes to Covid-19, but it's clear that many people still don't recognize the importance of fresh air. Some super-cautious people don't seem to realize how much danger can be mitigated by socializing outdoors or opening windows. Others seem not to understand how much risk persists indoors even when others are more than six feet away.

One big reason the public may still be so confused: the World Health Organization's long delay in recognizing that Covid was spreading through airborne transmission. On March 28, 2020, the WHO listed on its website as a "FACT" that "Covid19 is NOT airborne." Everyone was confused back then, so being wrong was understandable — but showing that degree of confidence was not. There were credible scientists at the time saying airborne spread was happening. Worse still, it took two years to change course — a delay experts pondered in a recent article in *Nature*, "Why WHO Took Two Years to Say Covid is Airborne." It was a mistake that eroded public trust and confused people about how to avoid the virus.

The problem, it turns out, was not one of evidence but burden of proof. The WHO officials thought they should assume Covid-19 was not airborne until they saw proof that it was. But why not assume it was airborne and put the burden of proof on other modes of transmission?

Looking back on my own columns on the question of how Covid was transmitted, I quoted different experts back in March of 2020 about the way infected people emit viral particles in little bits of saliva, from larger "droplets" that fall within six feet or smaller aerosols that can linger in indoor air and travel larger distances. Most experts favored droplets as Covid's primary mode of spread, but others were very concerned about airborne transmission, in which the virus contaminates stagnant indoor air and spreads despite physical distancing and loose-fitting cloth masks.

It's clear now and should have been clear then that the WHO had put the burden of proof in the wrong place.

One simple rule about scientific burden of proof was voiced by philosopher David Hume and popularized later by Carl Sagan: Extraordinary claims need extraordinary evidence. When a revolutionary idea breaks all the rules — such as Einstein’s theory of relativity, which violated Newton’s laws — we don’t accept it without rigorous testing. Airborne transmission of Covid-19 was never an extraordinary idea, but the WHO nonetheless demanded an extraordinary level of proof.

But plenty of other diseases move through the air. Rather than insist that airborne transmission be proved beyond a shadow of a doubt, the WHO should have used an approach called abductive reasoning. That’s when scientists consider which ideas best fit all the available evidence. Darwin used it in *Origin of Species* to describe why his theory of natural selection fit detailed observations of living things better than creationism or other ideas. With abductive reasoning, competing ideas might fit some of the evidence — but if they can’t explain the whole body of data as well as some other idea does, they take a back seat.

By late spring of 2020, multiple lines of evidence pointed to airborne spread as responsible for at least some cases of Covid-19. Contact tracing studies showed that outdoor transmission was rare and that indoors, time spent in the same room mattered more than distance between people. Other studies showed that the disease was spreading in bursts — most people didn’t give it to anyone, but a few gave it to huge numbers through so-called superspreading events, almost always indoor gatherings.

This doesn’t rule out the other modes of transmission, like droplets transmitted at close range and contaminated surfaces, but it does suggest that airborne spread was playing an important role.

Science is a bit more malleable than many people think — it’s not about facts and proof but about hypotheses, observations, inferences, evidence, theories and consensus. Thinking about burden of proof often helps in evaluating health-related claims, where “no evidence” doesn’t necessarily mean wrong, and some evidence doesn’t mean you have the whole answer.

Even the term “airborne” can be confusing if it’s not translated into practical advice about how to avoid getting infected. Now that governments in the U.S. and Europe are moving away from mandates and expecting people to behave according to our own risk tolerance, it’s more important

than ever for public health authorities to clarify how best to minimize risk for those who choose to do so.