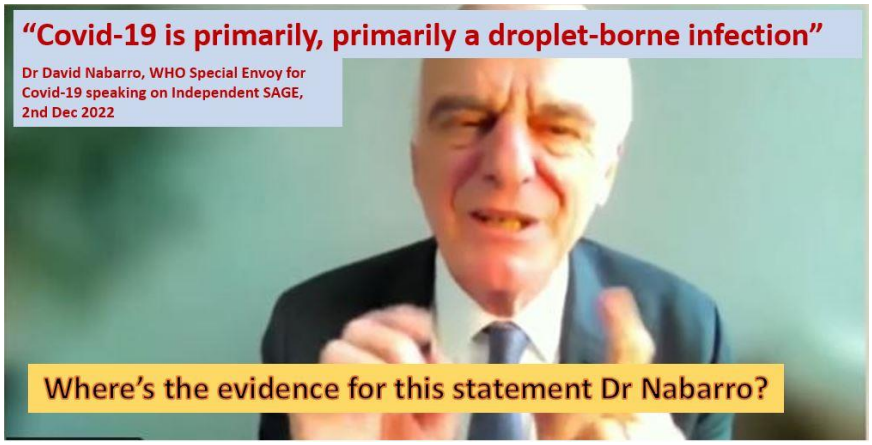
Where's the evidence Dr Nabarro?



Statement by Doctors in Unite

Summary

Dr Nabarro's recent comment that Covid-19 is primarily a droplet-borne infection flies in the face of overwhelming international scientific consensus that the pandemic is driven by airborne transmission of the SARS-CoV-2 virus.

Despite airborne transmission being accepted as the dominant mode of spread in almost every other arena, within official infection prevention and control (IPC) bodies in the World Health Organization (WHO) and many national authorities including the UK, there is denial or minimising of airborne spread, and continuing adherence to the droplet theory of transmission. This has meant rejection of airborne mitigations within healthcare, with profound consequences for the lives and health of healthcare workers, as well as for patients in hospitals and care homes.

It is now clear that the IPC authorities will not be persuaded, no matter how much evidence is presented to them that SARS-CoV-2 is primarily airborne, and that efforts by aerosol scientists, engineers and health experts to provide further evidence of this, are futile. We suggest therefore it is time to change tactics, and to demand from IPC within WHO, from senior WHO officials like Dr Nabarro and national IPC bodies, the evidence they have for droplet transmission. Throughout the pandemic, all we have had are bald assertions that Covid-19 is droplet spread, without any evidence. One of the most important lessons of the pandemic has been the need for statements, policies and practice to be based on robust, peer-reviewed evidence. It is remarkable that no such evidence has been provided for the putative mode of spread for a global pandemic by official infection control authorities.

This statement from Doctors in Unite explores these issues in detail, and highlights the disastrous record of droplet-only precautions in our hospitals and care homes. It also asks why the critically important "precautionary principle" was not applied throughout healthcare from the outset, to keep workers and patients safe, while the mode of transmission of the virus was being fully elucidated, despite this being official WHO policy. The pandemic is accelerating globally, with worrying new variants continuing to emerge. We cannot afford any longer denial and obfuscation on the main route of transmission of the virus from the global authority on pandemic management. Recognising and widely promoting the correct (i.e. scientifically evidenced) route of transmission of the virus is critical to our adopting the appropriate measures to limit spread.

It is time for Dr Nabarro and IPC bodies to either produce the evidence for droplet spread, or to officially abandon this theory of transmission, and embrace airborne spread. They cannot continue to do neither in the face of the ongoing devastation wrought by this virus across the globe.

Introduction

On 2nd December 2022, at the weekly Independent SAGE briefing, Dr David Nabarro, WHO Special Envoy on Covid-19, said "…..*Covid is primarily, primarily, a droplet-borne infection, it may be airborne in certain circumstances, but we still in WHO contexts say its primarily droplet-borne…"* [1] [2]

This intervention from a top WHO official, comes after nearly 3 years into the pandemic, in the face of huge advances in our understanding of the transmission of SARS-CoV-2 and other respiratory pathogens. International scientific consensus for some time now has been very clear: transmission is primarily airborne and infection is caused by inhalation of the virus. This view was reiterated again by a multinational Delphi consensus statement published in Nature in early November 2022, from 386 academic, health, non-governmental organization, government and other experts from 112 countries. 100% of the experts reaffirmed that *"SARS-CoV-2 is an airborne virus that presents the highest risk of transmission in indoor areas with poor ventilation."* [3]

Dr Nabarro criticised

Dr Nabarro's comment was greeted with severe criticism on social media; a video clip of his comments has been viewed over 30,000 times on Twitter. [1] Independent SAGE issued a statement directly contradicting him, saying "*the overwhelming balance of evidence*" indicated the opposite, i.e. predominantly airborne spread. [4] Many others, including well respected experts, expressed anger, dismay and despair at his comments. [see refs 1; 5 replies]

It was notable that Dr Nabarro's comment was unprompted - when he made it, he was answering a question about lessons learned from the UK's response to the pandemic. His comment came soon after two recent statements of international import on the nature of Covid transmission. The first is the multinational Delphi consensus statement in Nature referred to above; the second is from Dr Soumya Swaminathan, the recently departed WHO Chief Scientific Advisor, who said in an interview published in Science magazine in late November 2022, that "*based on the available evidence*" WHO should have said SARS-CoV-2 is an airborne virus "*much much earlier*". [6] This raises the question, was Dr Nabarro using Independent SAGE to push back against these recent statements and try to defend the droplet theory of transmission?

Mode of transmission is critical to how we tackle the pandemic

Understanding the mode of transmission of Covid-19 is fundamental to our response to the pandemic. While vaccines significantly reduce the risk of serious illness and death in countries where they are available, very widespread transmission of SARS-CoV-2 continues to occur, in both unvaccinated and vaccinated populations. There is also emerging evidence that infections really matter, causing cumulative damage with each additional infection [7]. SARS-CoV-2 is a neurotropic, vasculitic and immune-damaging virus, capable of causing severe injury to the health of individuals, communities and populations, the true extent of which we are now beginning to understand. Transmission must be addressed therefore.

If transmission occurs primarily by droplets, we should continue "droplet precautions" i.e. hand washing and cleaning of surfaces, and wearing standard "surgical" facemasks. If transmission is primarily airborne however, we need to ensure there is clean indoor air, especially in public spaces like schools, workplaces, public transport, hospitals and care homes. We also need to wear respiratory-grade facemasks to stop breathing in the virus, while continuing to practice hygiene measures as a precaution. To date, IPC advice and guidance states Covid-19 is not airborne (apart from very limited circumstances – see addendum); and only "droplet precautions" are required.

WHO and IPC denial of airborne spread

From the outset of the pandemic, instead of clarity and leadership from WHO on this vital question of transmission, we have seen denial, obfuscation and downplaying of airborne transmission by both the WHO and our own IPC authorities. [8, 9, 10, 11] As we discuss later, well before the Covid-19 pandemic started, there was good reason to believe SARS-CoV-2 could well be airborne, and within days of the WHO declaring the pandemic on 11 March 2020, internationally renowned aerosol scientists expressed concerns about the agency saying "Covid is not airborne". [12] On 1st April 2020 Professor Lidia Morawska wrote to the Director General of WHO on

behalf of 36 experts in various aspects of airborne infection transmission to bring attention to the significance of airborne spread. They presented a paper "*Airborne transmission of SARS-CoV-2: the world should face the reality*." [13] This was rejected by WHO.

On 6 July 2020 Professor Morawska and Professor Donald Milton published an open letter to WHO, on behalf of a much bigger group of 239 international experts, entitled "*It is time to address airborne transmission of coronavirus disease 2019 (Covid-19)*" which urged the body to update its guidance on how the virus spread.[14] The next day, on 7 July 2020, at a press conference, WHO said there was "*emerging evidence in the field*"; while the evidence was there all the time, this was the first time WHO acknowledged the possibility of airborne transmission, but as we show later, did nothing about it and did not change the guidance.

The pattern of denial and minimisation continued. In July 2021 Byline Times carried an interview with Professor Mario Possamai, senior advisor to the SARS commission in Canada which investigated the SARS1 outbreak in Ontario in 2003, entitled '*World Health Organisation Doomed the World by Concealing Evidence of Airborne COVID Transmission*". [15] Possamai expresses his shock and frustration at WHO for failing to address the airborne nature of Covid-19 and at its efforts to suppress this information. There is a growing literature, in scientific journals, mainstream media and social media, discussing possible reasons for this, including vested interests and the influence of donor governments and corporations. [15, 16, 17]

Scientific facts however would not be denied [18] and in the intervening three years scientists and researchers from across the globe have conducted innumerable further studies demonstrating that Covid-19 is spread through the air. Instead of embracing the evidence and the promise this holds for reducing the impact of SARS-CoV-2 and many other airborne pathogens, there has been a very negative response from those in positions of power and authority in the field of infectious disease prevention and control, (i.e. the WHO COVID-19 Infection Prevention and Control Guidance Development Group [IPCGDG] and national IPC authorities including our own "IPC Cell" here in the UK). They have ignored the extensively documented history of airborne transmission of other respiratory pathogens [19], excluded or marginalised from key scientific committees those with expertise in aerosol science and engineering [20, 21, 22], and kept raising the evidence bar ever-higher for new studies demonstrating airborne spread of SARS-CoV-2. The evidence of airborne spread, and the experts conducting and disseminating the research were and still are seen as a threat. In this way droplet-borne infection has remained official policy by default and not by dint of evidence proving it predominates spread.

WHO has shifted its position somewhat (but in a confusing, half-hearted and contradictory manner) and since December 2021, i.e. nearly 2 years after the onset of the pandemic, some of its website documentation says that Covid-19 is transmitted

through the air [23] However, it has not taken down other communications which say the opposite, for example one which says "*Fact Check: Covid is not airborne*" and saying so was "misinformation" [24]. And mention of the virus as "airborne" continues to be almost completely absent from public WHO communications.

r Nabarro shines a light on droplet-borne transmission

Dr Nabarro's recent statement focusses attention back on droplet spread, and rather than us asking yet again "Why won't WHO and IPC accept airborne spread in the face of all this evidence?" let us demand to see the evidence for droplet transmission. His statement is, as always with advocates of droplet theory, mere assertion without supporting evidence. It is high time to see if these claims withstand scientific scrutiny of the evidence.

As stated above, one of the essential lessons of the pandemic has been the need for policy and public statements to be evidence-based. The greater the position of authority and responsibility of those making the statements, the more important it is that the statements are supported by evidence. And for doctors and scientists there is an additional responsibility: our theories, decisions and practice must be based on the scientific method and that means high quality, peer-reviewed evidence. This is a requirement and duty of our privileged positions in society and the trust placed in us by the public,as well as requirements of our professional license to practice. If statements are not evidence-based, they may amount to misinformation or even disinformation, with dire consequences. So we say to Dr Nabarro, the WHO IPCGDG and the UK IPC Cell, you continue to assert that Covid-19 is primarily a droplet-spread disease in the face of overwhelming evidence to the contrary, you therefore need to provide the evidence.

Work has been done by experts, outside of WHO, to examine the evidence for droplet spread. Jose-Luis Jimenez, Distinguished Professor of Atmospheric Chemistry at the University of Colorado and 21 other renowned experts in aerosol science, engineering, virology, public health, medicine, microbiology, architecture and the built environment, undertook an historical analysis of transmission research of disease, including evidence for droplet transmission. They found no evidence for droplet transmission. [25] Here in the UK, Evonne T Curran, infection control specialist and Honorary Senior Research Fellow at the School of Health and Life Sciences, Glasgow Caledonian University, carried out her own detailed review of both the literature and official guidance documents from WHO and UK infection prevention and control. The result was the same: no evidence. All she found were circular references to unsubstantiated assertions that droplet transmission occurs, but no actual evidence. [26, 27]

Failure to advise the precautionary principle

The foundational document for the management of respiratory pandemics in health care is the WHO guideline *Infection prevention and control of epidemic- and pandemic-prone acute respiratory infections in health care*, [28] Section 1.3.3 is on "Novel acute respiratory infections with potential for a high public health impact" and states:

When a new infectious disease is identified, the modes of transmission are not well understood. The epidemiological and microbiological studies needed to determine the modes of transmission and identify possible IPC measures may be protracted. Due to the lack of information on modes of spread, Airborne and Contact Precautions, as well as eye protection, should be added to the routine Standard Precautions whenever possible, to reduce the risk of transmission of a newly emerging agent …….. These precautions should be implemented until further studies reveal the mode of transmission.

SARS-CoV-2 fits this description to the letter: it was a new pandemic virus and its mode of transmission was not well understood early on, and therefore precautions needed to be taken against all possible modes of spread. The WHO guidance could not be clearer on this point.

The European Parliament says "*The precautionary principle enables decision-makers to adopt precautionary measures when scientific evidence about an environmental or human health hazard is uncertain and the stakes are high*." [29] Yet on 11 February 2020, when Dr Tedros Ghebreyesus, the Secretary General of WHO, ruled out airborne transmission and said Covid-19 was droplet spread [8, 9], he did not say there was doubt, or we don't know yet, he denied it occurred. Maria Van Kerkhove, WHO Technical Lead for Covid-19, did the same, with equal certainty, at a press conference on 22 March 2020 when she said that "*Covid-19 is not airborne…. it spreads by droplets*". [30] WHO knew that coronaviruses could spread through the air following the SARS-CoV-1 outbreak in early 2003 [31, 32, 33] and the MERS outbreak in 2015 (where clear evidence of superspreading was documented in Korea) [34], and other studies published years before the pandemic pointed to possible airborne transmission of other respiratory pathogens. [35, 36, 37, 38, 39, 40, 41, 42]

There was good reason to believe therefore in these early days of the Covid-19 pandemic that airborne transmission of SARS-CoV-2 could also occur, and no way of knowing that it did not. However these senior WHO officials ignored their organization's own guidance and ruled out airborne spread of SARS-CoV-2 entirely.

In July 2020, WHO acknowledged the "possibility of airborne transmission" after the international group of 239 scientists published their open letter calling on the

organization to recognise airborne spread and to update guidance to include measures which would mitigate the risk of airborne transmission. Professor Benedetta Allegranzi, WHO technical lead for infection prevention and control, said in response "*We acknowledge that there is emerging evidence in this field, ……. And therefore, we believe that we have to be open to this evidence and understand its implications regarding the modes of transmission, and also regarding the precautions that need to be taken.*" [43] But these words led to no change in IPC guidance – WHO continued to ignore the precautionary principle even as they acknowledged the possibility of airborne transmission. This failure continues to this day, even as more and more evidence for airborne transmission has accumulated since July 2020, and none for droplet transmission.

In stark contrast, the approach taken by the many scientists, doctors and other experts who do say Covid-19 is airborne, is very different: they say we should implement airborne protections but also continue to take droplet precautions as well. While they call for the urgent implementation of better ventilation, air filtration and respiratory PPE to combat transmission, none of them advocate the abandonment of the precautionary principle for other possible modes of spread.

Repudiation of airborne transmission appears to be the aim

The statements by senior WHO officials in 2020, and repeated statements since then that Covid-19 is droplet-spread [1, 44, 45], without at the same time advocating the precautionary principle, is a calculated repudiation of the need for airborne protections to prevent transmission. This "either – or" approach is the antithesis of safe, rational infection prevention and control policy. It also suggests that factors other than the science of respiratory pathogen transmission are playing a role in WHO's infection control policies. UK IPC policy has done exactly the same – paying lip service to the possibility of airborne transmission while failing to implement the critically important precautionary principle.

It also begs the question, whose interests are served by their actions? Professor Jimenez had the following to say on this:

"Policy makers and politicians have a natural bias against the idea that diseases may be airborne. Droplets and surfaces are very convenient for people in power, all of the responsibility is on the individual. On the other hand if you admit it is airborne, institutions, governments and companies have to do something." [46]

The failure of droplet-only precautions in practice

The failure of droplet precautions alone to limit spread of Covid-19 within our hospitals and care homes here in the UK has been catastrophic. Over 2,100 health and social care workers died from Covid-19 in the first two years of the pandemic

[47], while almost 200,000 NHS workers have long Covid [48]. Nearly 40,000 residents of care homes died from Covid-19 in the first year of the pandemic [49] while 11,600 patients died of Covid-19 they caught in hospital up until November 2021 [50]. These figures are out of date, and will be higher now. Rates of hospital acquired Covid-19 infection have been high for most of the pandemic, reaching 36% in December 2022 [51]. This is an infection control disaster by any measure – the average rate of hospital acquired infections for other pathogens is around 6% [52]. The scientific method also requires evaluation of the results of current practice; one might therefore imagine that these figures would prompt a rethink by the IPC Cell. Nothing has changed however, to date no airborne precautions are in place.

The UK Covid-19 Public Inquiry and impending legal proceedings

The official public UK Covid-19 Inquiry [53] has now begun its work; the first module will hear evidence on the epidemiology of SARS-CoV-2, which includes its mode of transmission. Module 3 of the Inquiry will consider the impact of Covid-19 on healthcare systems and healthcare workers, and the response of the IPC Cell and its guidance will come under scrutiny. IPC will no doubt say they have been following WHO guidelines on infection prevention and control. However wilfull blindness towards the mountain of evidence of airborne transmission combined with un-evidenced assertions that Covid-19 is a droplet-borne infection will not withstand scrutiny at an independent public inquiry. A large number of health professionals' organizations and trade unions, including the BMA and RCN and Unite the Union, as well as experts in clincial care and microbiology have been publicly and strongly challenging IPC over the last 3 years over its "fundamentally flawed" guidelines [54, 55, 56] and will be saying so at the Inquiry.

In addition, the first of many court cases are likely be heard this year, where individuals and groups will be claiming compensation and damages from employers for contracting Covid-19 at work in the NHS and elsewhere, and who have suffered injury or disability and/or lost their jobs. In hospitals, NHS Trusts have deferred to IPC clinicians to determine what protections should be put in place to protect healthcare workers, and the the great majority of NHS Trusts have failed to institute airborne mitigations as a result. However, IPC guidance is not only fatally flawed, it also applies to the protection patients, not to healthcare workers, and has no statutory power nor standing within the Health and Safety at Work Act which places an over-riding duty of care on employers to provide a safe workplace for their employees. [57] IPC guidance documents explicitly recognise this, and state, "this guidance is of a general nature. Employers should consider the specific conditions of each individual place of work and comply with all applicable legislation and regulations, including the Health and Safety at Work etc. Act 1974. This guidance does not supersede existing legislation or regulations across the UK" [58] In a recent highly significant inquest ruling into the deaths of two nurses, the Senior Coroner for South Wales Central concluded that Covid-19 is an industrial disease, i.e. a condition or illness

caused by exposure to dangerous substances or unsafe conditions in the workplace. [59]

Accountability of those determining infection control policy

The multinational Delphi consensus statement referred to above [3] also says that 92% of the experts agreed that "*Public health authorities contribute to the dissemination of false information when their communications do not reflect current scientific understanding that transmission of SARS-CoV-2 is primarily airborne*" A recent article in the British Medical Journal by Wang et al, Understanding and neutralising covid-19 misinformation and disinformation, states

Historically, science denialism has caused people to refuse preventative measures like immunisation or life saving HIV/AIDS medications, which has distorted attitudes and resulted in years of severe illness and death ……. Recent false or misleading covid-19 narratives promoted by some groups to discredit legitimate public health measures, in particular non-pharmacological interventions, may have likewise contributed to preventable illness and death and those responsible must be held legally accountable. [60]

If there is no evidence for droplet spread, there is a prima facie case that Dr Nabarro and others are engaging in the dissemination of false information about the pandemic. Such statements also discredit legitimate public health measures, in particular the "non-pharmacological interventions" of better ventilation, air filtration and respiratory facemasks. This appears to place him in breach of his duties as a doctor, under the *Good Medical Practice regulations* of the General Medical Council [61] and a number of the principles set out in the "*Good Public Health Practice*" guidance document of the UK Faculty of Public Health. [62]

Addendum: aerosol generating procedures (AGPs)

IPC guidance from WHO and the UK IPC Cell do advise airborne precautions in one particular circumstance, so-called "aerosol generating procedures". AGPs are performed on a small number of patients, and may involve instrumentation of the mouth, nose or upper airway and use high flow air or oxygen. The concept of AGPs is an integral part of IPC guidance, and the only circumstance that risk of airborne transmission is acknowledged in healthcare settings by both WHO IPCGDG and the UK IPC Cell.

Aerosol generation by AGPs has been studied in detail by anaesthetists, and aerosol scientists working with respiratory physicians to establish what risks they actually do pose. The results are unequivocal: AGPs pose no additional risk and produce far fewer aerosols than common respiratory activities such as speaking or coughing [63]. So poor is the evidence base for AGPs posing any risk of airborne transmission,

a review article in the Lancet in July 2021 [64] called for the term AGP to be abandoned, "*as it is neither accurate (aerosol is not generated above a cough for many of these procedures), implies aerosol emission is only from specific procedures (rather than being generated during normal respiratory events), (and) potentially misidentifies the source of infection risk…"*

Thus this second plank of droplet theory also has no scientific foundation. But, this too has been ignored by IPC; the list of procedures has been reduced, but "AGPs" remain part of current WHO and UK IPC guidance. [65] [66]

Afterword

It is a matter of great concern that the World Health Organization has taken the path it has concerning the issue of the mode of transmission of Covid-19. Current WHO IPC policy is un-evidenced, and therefore unscientific, and we feel sure that the views and statements of these senior WHO officials and the WHO IPCGDG are not shared by many within the organization. UK IPC policy is the same, and has also been subject to trenchant criticism, to the point that an opinion piece in the British Medical Journal in April 2022 concluded, "*We anticipate that unless airborne transmission is acknowledged, clearly explained, and acted upon in infection and prevention control guidance, the discipline of infection control is in danger of relegating itself to obscurity as a credible specialty*." [67]

At the same time one of the most important breakthroughs in our understanding of infectious disease transmission for a century, looks like it is being deliberately suppressed. We have the tools to clean indoor air, the engineers and the aerosol scientists have been telling us this for 3 years now. When we do this we will stop this pandemic.

The science will ultimately prevail, but the price paid to date has already been far too high, and the changes needed cannot come too soon.

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