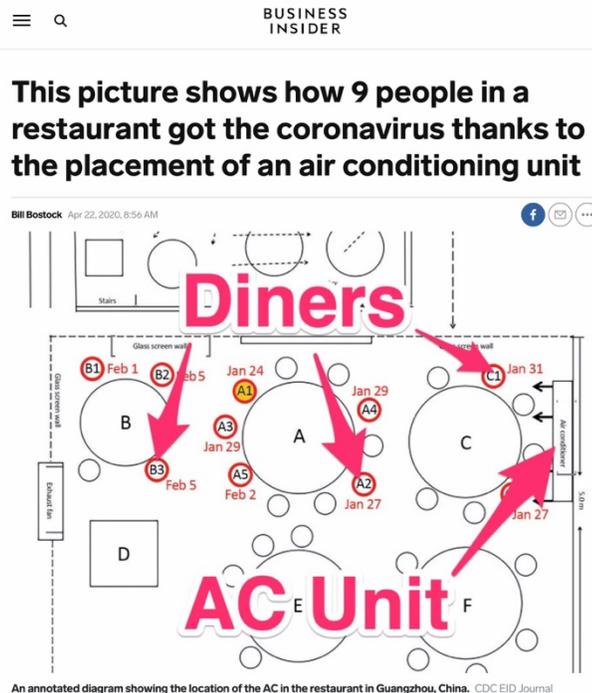


The Scientific Need To Wear Masks and Avoid Crowds And Why The 6-Foot Protocol Is Bogus The Aerosolization of SARS-CoV-2

By Wesley Muhammad, Ph.D.
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An annotated diagram showing the location of the AC in the restaurant in Guangzhou, China. CDC EID Journal

Current COVID-19 shelter-in-place protocols established by the National Institute of Allergy and Infectious Diseases (NIAID) and the CDC are based on the assumption that the primary route of transmission of SARS-CoV-2 is through large respiratory droplets (larger than five microns in size) from a cough or a sneeze, droplets which submit to gravity and fall to the ground shortly after leaving the body. This assumption of short-range large droplet transmission is the basis of the rationale for the 6-foot-social-distancing protocol. But this is a bogus protocol.

The novel coronavirus SARS-CoV-2 can survive in the air for several hours in fine particles known as aerosols, according to preliminary research. The coronavirus...can be detected up to 3 hours after aerosolization and can infect cells throughout that time period, the study authors found.¹

¹ Nicoletta Lanese, “New coronavirus may spread as an aerosol, like SARS,” *Live Science* April 1, 2020.

The study referenced is an important one. It's written by Neeltje van Doremalen and colleagues from *the NIAID and the CDC (!)*, along with Princeton University and the University of California, Los Angeles. In March the NIAID's and the CDC's own scientists demonstrated that the virus can be suspended in the air in an ultrafine mist produced when *we simply exhale*. They wrote

SARS-CoV-2 remained viable in aerosols throughout the duration of our experiment (3 hours), with a reduction in infectious titer from $10^{3.5}$ to $10^{2.7}$ TCID₅₀ per liter of air...Our results indicate that aerosol and fomite transmission of SARS-CoV-2 is plausible, since the virus can remain viable and infectious in aerosols for hours and on surfaces up to days (depending on the inoculum shed).²

While droplets are larger than 5 microns, aerosols are smaller than 5 microns. Shelly Miller, Professor of Mechanical and Environmental Engineering at the University of Colorado Boulder who studies aerosols and air pollution, says while discussing "Aerosols as virus delivery systems":

The new coronavirus, SARS-CoV-2, is tiny, about 0.1 microns - roughly 4 millionths of an inch - in diameter. Aerosols produced by people when they breathe, talk and cough are generally between about 0.7 microns to around 10 microns – completely invisible to the naked eye and easily able to float in air. These particles are mostly biological fluids from people's mouths and lungs and can contain bits of virus genetic material... There is a significant amount of evidence that COVID-19 is transmitted by the inhalation of airborne particles.³

As small virus-containing droplets are coughed up or sneezed out they transition from the warm and moist conditions of the respiratory system to the colder and drier outside environment. The liquid evaporates and the ultrafine residual dried material from the original droplets, called *nuclei droplets* or *aerosols*, remain suspended in the air.⁴

SARS-CoV-2 can spread through the air in tiny particles from exhalation, not just through large droplets emitted in a cough or sneeze. "Though current studies aren't conclusive, 'the results of available studies are consistent with aerosolization of virus from normal breathing'"⁵ In contrast to short-range large droplet transmission, aerosol-transmission has a longer range. Dr. Lydia Bourouiba, associate professor of MIT who has researched the dynamics of exhalations for years at The Fluid Dynamics of Disease Transmission Laboratory, reported in March that her investigations showed the coronavirus was effective

² Neeltje van Doremalen et al., "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1," *The New England Journal of Medicine* 382 (2020): 1-4.

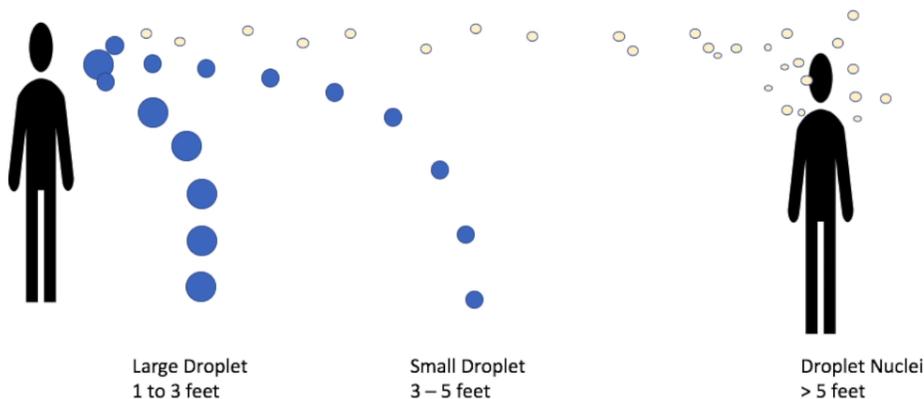
³ Shelly Miller, "Coronavirus drifts through the air in microscopic droplets – here's the science of infectious aerosols," *The Conversation* April 24, 2020.

⁴ See e.g. Raymond Tellier et al., "Recognition of aerosol transmission of infectious agents: a commentary," *BMC Infectious Diseases* 19 (2019): 1-9.

⁵ Robert F. Service, "You may be able to spread coronavirus just by breathing, new report finds," *Science Magazine* April 2, 2020.

at ranges of up to 27 feet and stay in the air for hours.⁶ This is why the 6 feet protocol is bogus, and the NIAID and the CDC both know it, as we saw above. On April 1, 2020 the National Academies of Sciences, Engineering, and Medicine published a statement confirming “Currently available research supports the possibility that SARS-CoV-2 could be spread via bioaerosols generated by patients’ exhalation.”⁷ Dr. Kimberly Prather, an aerosol chemist at the University of California, San Diego, said: “[I’m] relieved to see aerosolization is accepted. This added airborne pathway [of SARS-CoV-2] helps explain why it is spreading so fast.”⁸

Airborne Precautions



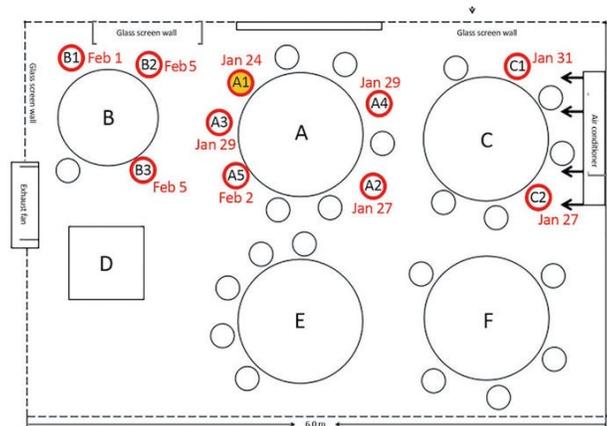
This is why wearing a proper mask in the public and **avoiding crowds** is vital. In public spaces with less than ideal ventilation systems that might house a crowd, such as a hospital waiting room, an office building, public transportation, a dine-in restaurant, a retail shop or a grocery store, a large number of pathogen-containing aerosols are often airborne and has caused outbreaks. In a restaurant in Guangzhou, China, a single pre-symptomatic carrier infected nine other dinners who were spread across three tables for one hour. Researchers believe

⁶ Lydia Bourouiba, “Turbulent Gass Clouds and Respiratory Pathogen Emissions: Potential Implications for Reducing Transmission of COVID-19,” *Journal of the American Medical Association* March 26, 2020; Jordan Culver, “6 feet enough for social distancing? MIT researcher says droplets carrying coronavirus can travel up to 27 feet,” *USA Today* March 31, 2020;

⁷ National Academies of Sciences, Engineering, and Medicine, “Rapid Expert Consultation on the Possibility of Bioaerosol Spread of SARS-CoV-2 for the COVID-19 Pandemic (April 1, 2020).” (Washington, DC: The National Academies Press, 2020).

⁸ Robert F. Service, “You may be able to spread coronavirus just by breathing, new report finds,” *Science Magazine* April 2, 2020.

the air conditioning unit recirculated dirty air with the airborne virus particles.⁹ A South Korean study documented an outbreak with 94 persons in a call center: “This outbreak shows alarmingly that [SARS-CoV-2] can be exceptionally contagious in crowded office settings,”¹⁰ and in other crowded public spaces, especially indoor spaces.



Guangzhou, China restaurant area of outbreak

In March a Chinese study was submitted which detected genetic material of SARS-CoV-2 in airborne suspensions and in the ventilation system of two Wuhan hospitals and in public spaces such as department store entrances.¹¹ Other studies have found widespread hospital evidence of possibly aerosolized viral RNA in isolation rooms of patients being treated for COVID-19.¹² Healthcare workers are at tremendous risk of this airborne virus and are in fact hit hard by COVID-19. The coronavirus is killing way more than what is suggested by the CDC’s *under-reporting* of the impact of COVID-19 on these frontliners. “The number of healthcare workers who have tested positive for the coronavirus is probably far higher than the reported tally of 9,200, and US officials say they have no comprehensive way to count those who lose their lives trying to save others.”¹³ In some states like Ohio, healthcare worker illness is as high as 20%. Black women are disproportionately represented as nursing assistants and home health

⁹ Jianyun Lu et al. “COVID-19 outbreak associated with air conditioning in restaurant, Guangzhou, China, 2020.” *Emerging Infectious Diseases* 26 (2020): <https://doi.org/10.3201/eid2607.200764>.

¹⁰ Shin Young Park et al., “Coronavirus disease outbreak in call center, South Korea,” *Emerging Infectious Diseases* 26 (2020): <https://doi.org/10.3201/eid2608.201274>

¹¹ Yuan Liu et al., “Aerodynamic analysis of SARS-CoV-2 in two Wuhan hospitals,” *Nature* April 27, 2020.

¹² Robert F. Service, “You may be able to spread coronavirus just by breathing, new report finds,” *Science Magazine* April 2, 2020.

¹³ Christina Jewett and Liz Szabo, “Coronavirus is killing far more US health workers than official data suggests,” *The Guardian* April 15, 2020.

aides.¹⁴ This makes Black women disproportionately exposed to airborne SARS-CoV-2. Black women are also disproportionately represented as grocery store cashiers and Black males as baggers and stockers.¹⁵ The crowded grocery store can have a lot of pathogen-laden aerosols floating in the air making grocery store workers vulnerable, *because there are many reports of them being prohibited from wearing masks on the job*. As a result, *thousands* of grocery store workers are sick but, without the results of a test, they are forced to come into work.¹⁶ The airborne viruses circulating in the crowded public spaces where Black people disproportionately work is just one source of the COVID-19 epidemic that is ravaging Black America right now. Regardless of what White people are doing, anyone who is discouraging Black people from wearing masks in the public square is not doing Black people any good.



¹⁴ Jocelyn Frye, “On the Frontlines at Work and Home: The Disproportionate Economic impact of the Coronavirus Pandemic on Women of Color,” *Center For American Progress* April 23, 2020.

¹⁵ Nathaniel Meyersohn, “Black grocery workers feel increasingly vulnerable to coronavirus,” *CNN Business* April 15, 2020

¹⁶ Abha Bhattaral, “‘It feels like a war zone’: AS more of them die, grocery workers increasingly fear showing up at work,” *The Washington Post* April 12, 2020; Irene Jiang, “At least 30 grocery store workers have died from the coronavirus, and their colleagues are pleading for shoppers to wear masks and respect social distancing,” *Business Insider* April 15, 2020.