

Did you know: Viral transmission can occur through your eyes

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As most people use cloth coverings to shield their noses and mouths in an effort to lessen the spread of the SARS-CoV-2 virus, their eyes — a possible infection route — usually remain open to the air.

In a recent interview Dr. Joseph Fair (see **Figure 1**), a virologist and epidemiologist, shares that as a passenger on a crowded commercial flight, he suspects he contracted the SARS-CoV-2 virus through his eyes.¹ Three days after flying home to New Orleans on a plane that “had us packed in like sardines,” he told NBC News, he got sick with flu-like symptoms that gradually worsened until he ended up in the hospital. “I had a mask [fitted N95]² on, I had gloves on, I did my normal wipes routine ... but obviously, you can still get it through your eyes,” Fair told NBC News from his hospital bed. “And of course, I wasn’t wearing goggles on the flight. Instinctively, I probably should have gotten off.”

“That’s one of the three known routes of getting this infection that we just don’t pay a lot of attention to; we tend to pay attention to the nose and mouth because that is the most common route,” Fair said. “But you know, droplets landing on your eyes are just as infectious.”

Fair, a runner who said he was at “the peak of health in my life,” had a warning for healthy, younger people who might feel invincible: “If it can take me down, it can take anybody down.”

When asked if we “should all be wearing some kind of eye protection,” his response was “in my opinion, Yes.... in reality we are just trying to keep you safe.”³

Guangfa Wang, a member of the national expert panel on pneumonia in China, reports to have come down with pneumonia following exposure to SARS-CoV-2, which was preceded by eye redness.^{4,5} Wang wore an N95 mask but was not wearing any eye protection. Additionally, researchers successfully inoculated Rhesus monkeys with the virus via eye swabs, confirming this is a viable infection route.⁶ A study in Hong Kong published in *Lancet Respiratory Medicine* on May 7, 2020, also showed that the SARS-CoV-2 virus was highly infective of cultured human conjunctiva (the outer protective membrane of the eye) explant tissue, with 100x higher viral replication rates than SARS-CoV.⁷ The American Academy of Ophthalmology updated recommendations that PPE be worn by medical personnel to protect mouth, nose (e.g., an N95 mask), and eyes (e.g., goggle or face shield) when caring for patients, especially those suspected of having COVID-19.⁸

As an adjunct or standalone PPE, face shields could be an increasingly useful tool in limiting the transmission of respiratory viruses, such as SARS-CoV-2 by helping to minimize droplet and contact transmission.



Figure 1: Joseph Fair shared this photo via Twitter⁹ during his recent hospitalization.

Face masks:

- + Cause discomfort, leading to constant fidgeting and re-adjustment.
- + Extra touching of masks could spread contamination from the outside of the mask.
- + Wearers may loosen the fit and/or uncover their nose to improve breathing, greatly reducing filtering effectiveness.
- + Make it difficult to communicate as the listener can no longer see lip movement (especially important for hard of hearing individuals), and the mask tends to muffle speech. To overcome this, the speaker tends to strain or raise their voice, increasing the emission of respiratory droplets according to experimental studies.¹⁰

Face shields:

- + Minimize inward transmission of respiratory germs from others to your eyes, nose, mouth.¹¹
- + Minimize outward transmission of respiratory germs¹² when you cough, sneeze or talk.¹¹
- + Deter subconscious face touching.
- + Appeal to the general public for their usability and functionality.

About Actuated Medical, Inc.

Actuated Medical develops medical devices that integrate electronically controlled motion technologies that improve patient outcomes and reduce healthcare costs. Actuated Medical a certified women-owned business located in Bellefonte, PA and is ISO 13485 certified. In response to the COVID-19 pandemic, Actuated Medical shifted to manufacturing Face Shields in its FDA-compliant facility. Actuated Medical, Inc. does not make any claims of safety or effectiveness of its face shields for any intended use.

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