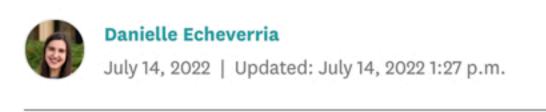
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COVID variants mean ventilation is more important than ever. So what does 'good' air flow look like?



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As coronavirus variants like BA.5 and BA.2.75 become more prevalent and more transmissible, experts are repeatedly pointing to a

the pandemic — air ventilation, especially indoors. "We don't know what variants we're dealing with in the future," said Stanford University infectious disease specialist Dr. Abraar Karan,

transmission reduction strategy that's worked since the beginning of

Because of that, he said, there "has to be a strategy of cleaning the air." But what does good ventilation actually look like?

Ventilation is often measured in "air changes per hour," which

measures how many times all of the air in a room is replaced,

else, and reduces the exposure of anyone inside."

"but transmission is always the same."

In other words, it's about cleaning the air that's there and getting fresh air in.

calculated using the ventilation rate and the volume of air in a room.

of Colorado Boulder, wrote in the Conversation. "Bringing in this air dilutes any contaminant in a building, whether a virus or something

But most home heating and cooling systems don't bring in outdoor

"Simply put, the more fresh, outside air inside a building, the better,"

Shelly Miller, a professor of mechanical engineering at the University

air, according to the Environmental Protection Agency, which means outdoor air comes in through open windows and doors, as well as the cracks around them and any other openings. So how many air changes per hour should you have?

minimum of 12 air changes per hour to control spread in airborne infection isolation rooms, and more for other parts of the hospital.

Public Health.

how much clean air is available.

risk.

Though these target numbers were made with medical facilities in mind, they "can provide a good reference for other workplaces and

public settings" where people who have COVID or any other airborne

disease may be present, according to the California Department of

The CDC recommends that modern health care facilities have a

For common non-medical public spaces like offices and schools, experts say that at least six air changes per hour can help significantly with virus spread.

Twelve air changes per hour is "a great goal if you could try to get

building science at Illinois Tech, during a webinar on air quality in

schools. "If you could get six air changes per hour or if you can get five

that," said Brent Stephens, an expert in indoor air quality and

air changes per hour or something near that, I think those are still really quite reasonable risk reduction numbers." While the air change rate is generally a good measure for typical public spaces like schools or offices, it's not always a good indicator of

the American Society of Heating, Refrigerating and Air-Conditioning Engineers, which has for years worked on issues of ventilation. That's because how densely an indoor space is occupied affects how much potential virus is in the air — the more people, the higher the

"Aircraft cabin outdoor air changes per hour (ach) are indeed high-

perhaps 15 ach for a narrow body aircraft and 13 ach for a wide body

aircraft," the society's recent guidance on aircraft air quality said.

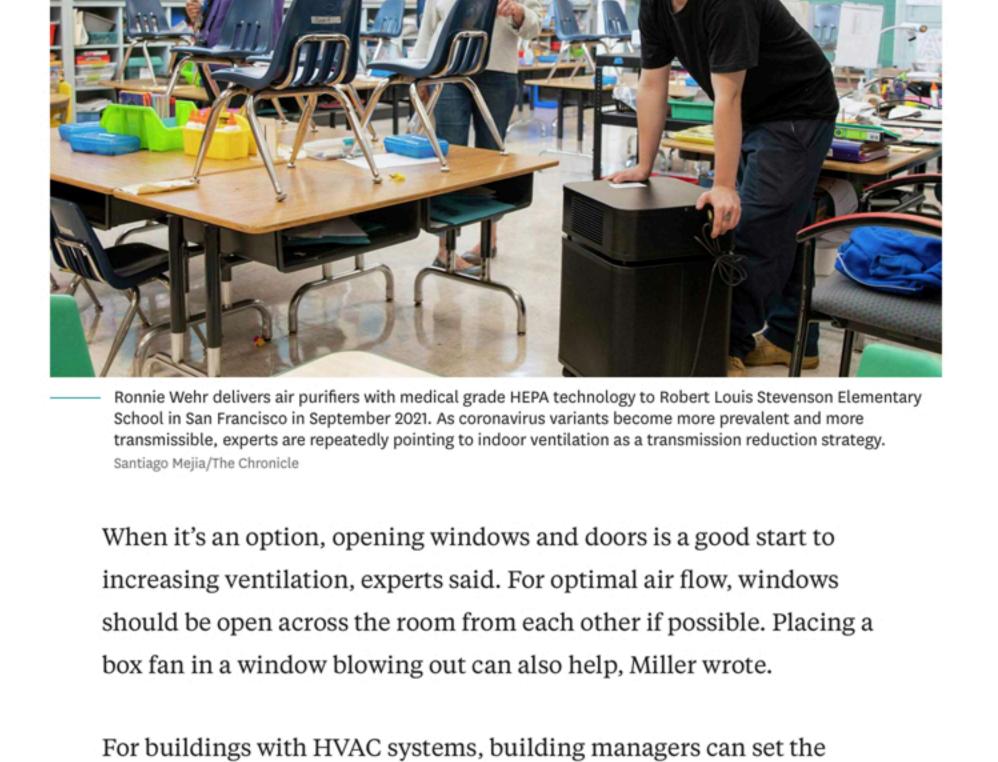
For example, airplanes have such high air change rates — but it

doesn't necessarily mean there's a lot of virus-free air, according to

"However, a high outdoor air change in the case of densely occupied spaces like an aircraft cabin or a subway car is not an indicator of a high supply of virus-free air to the occupants." In these kinds of cases, experts said, layering strategies is important - so wearing a high quality mask on a plane, for example, on top of its high ventilation rate further reduces risk.

changes per hour. So how can air quality be improved in these spaces?

But many places — especially schools — are far from even six air



system to bring in as much air as possible. HVAC systems should be equipped with a MERV 13 or greater filter, which should be cleaned as needed for both COVID-19 and for outdoor pollutants like wildfire smoke, according to the state health department.

homemade air cleaner with a box fan and air filters known widely as the Corsi-Rosenthal Box — Corsi was one of the inventors — which can be just as effective as a HEPA filter.

Another more temporary solution is assembling a low-cost,

These portable filters can help even in the case of buildings with a good HVAC system.

The California Air Resources Board also has a list of certified air

cleaners, though not all use a HEPA filtration system.

ventilation said.

capacity (providing 5 to 7 ACH), portable filters in the room bringing the total ACH to 10 or more provide a significant improvement in infection risk reduction," a Johns Hopkins report on school

"Even in the case of a well-maintained HVAC system running at full

But if you don't know whether a room has good ventilation and you can't control it, use your instinct.

"If you walk into a building and it feels hot, stuffy and crowded, chances are that there is not enough ventilation," Miller wrote. "Turn around and leave."