

After coughing and sneezing, bacteria can survive in the air for up to 45 minutes

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Transmission of airborne disease is the most common and difficult to prevent infection . In fact, the " *shoot* " bacteria from carriers (*through coughing, sneezing*) can survive in the air for up to 45 minutes.

Researchers have developed a new technique to achieve long-term and long-term aging goals of human biology. These particles are not polluted from the surrounding air.



It is known that most studies in this area have so far focused on laboratory biological particles, or air droplets, different from human-produced natural respiratory droplets.

The team found that a small group of **green pus bacillus** (*pseudomonas aeruginosa*), a common bacterium that causes disease in animals and humans that cause multidrug-resistant infections, can be transmitted through coughs and sneezes. . This common bacterium can survive in the air up to 45 minutes later.

Lidia Morawska , the lead research organizer at the Queensland University of Technology (*QUT*), said: "Our *previous research has found that these pathogens can travel within 4 meters. and still persists for 45 minutes after they are released into the air, so we want to find out how the droplets that carry bacteria through sneezing or coughing can infect humans such a large and long time* " .

P. aeruginosa is a type of *MDR-Multi Drug* , which can cause infections in *hospital infections* such as pneumonia due to respiratory infections and septicemia. Bacteria usually cause disease only in people with

existing diseases or conditions, especially patients with cystic fibrosis.



Although these bacteria have been carefully studied, we still do not fully understand how coughing or sneezing can spread the disease.

Morawska said: " *Most of the research in this area to date has focused on laboratory-generated 'bio sprays', or droplets produced in different places. of respiratory tract and different "bacteria" We have developed a new technique to target the short-term and long-term aging of the "biological mist sprayer" from humans, without being pollution from the surrounding air. "*

Technology from the team of Queensland University of Technology QUT, known as Tandem's Respiratory System Investigation System, or TARDIS, allows researchers to investigate how the **Aerosols** - or **aerosols** (*Colloidal systems of solid particles or other liquid, air or gas droplets* from coughing and sneezing spread to the surrounding environment - and for how long.

Morawska said: " *To demonstrate this technique, the droplets carrying bacteria (dispersed by cough) were sampled from two patients with cystic fibrosis and blue pus bacillus (pseudomonas aeruginosa) . As soon as the droplets carrying bacteria released into the air, they will quickly dry out, cool and become lighter to survive in the air, they also partly decomposed through exposure to oxygen in the air. The bigger the droplet, the more time it takes to evaporate . "*



Most of these droplets rapidly decline - enough for bacteria to survive inside them.

GS. Morawska said: " *We found that the concentration of active bacteria in dry droplets decayed rapidly with a half-life of 10 seconds for most bacteria. However, there was still a small group. bacteria have a half-life of more than 10 minutes* ".

Morawska adds: " *This suggests that some green pus bacillus (*pseudomonas aeruginosa*) are resistant to rapid decomposition of biology and therefore persist long enough in the room to create a risk of transmission. airborne infections, especially for people with respiratory problems such as patients with cystic fibrosis* ".

Although the researchers are not sure why this happens, they hypothesize that it is related to where the droplets are produced in the respiratory tract and the size of the droplets.

Morawska said: " *We think this may be because the droplets are produced in different places of the respiratory tract and carry" different "bacteria . Large droplets containing bacteria will take longer to evaporate, making them more resistant and able to maintain the bacteria's survival for a long time.* "

This shows that some green pus bacillus are capable of rapid biodegradability. Therefore, they remain in the air long enough to infect humans, especially for people with respiratory problems such as cystic fibrosis patients.

Either way, this study is important for controlling infections in hospitals and especially for the treatment of cystic fibrosis. In addition, it also provides more evidence to warn people - **cover your mouth when sneezing and coughing and washing your hands immediately afterwards** .

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