



Study Reveals SARS-CoV-2 RNA in 39% of Hospital Air Samples

Description

COVID-19 genetic material has been frequently detected in hospital air during community outbreaks, even in well-ventilated areas, according to a recent study published in *Respiratory Medicine*. Researchers from the Kirby Institute conducted air and surface sampling in the emergency department (ED) and intensive care unit (ICU) of a large hospital in Sydney, Australia, during two COVID-19 waves between November 2023 and July 2024. Their tests revealed that 39% of aerosol samples were positive for SARS-CoV-2 RNA.

Detection rates were significantly higher in the ED compared to the ICU. In fact, 80% of the positive samples were collected from the ED, highlighting areas such as the acute-care zone and public waiting room as key hot spots for virus presence. In the ICU, positive samples were found in a staff tearoom and near a negative-pressure room housing a COVID patient.

The study identified four positive aerosol samples collected in the ED a week before the hospital announced a multi-ward outbreak, suggesting that aerosol sampling could help detect outbreaks before they grow large. Conversely, surface contamination was less frequent, with only 7% of surface samples testing positive, both from an infected ICU patient's room.

The authors noted that during high community transmission periods, sufficient air changes in hospital ventilation systems might not be enough to safeguard staff and patients. They recommend using high-efficiency particulate air (HEPA) filtration and ensuring staff access to respiratory protection during outbreaks. They also highlighted the need for improved ventilation and strategies to protect patients in high-traffic ED waiting areas, where various infectious diseases may circulate.

Vocabulary List:

1. **Contamination** /kən,tæmɪ'neɪʃən/ (noun): The presence of an unwanted substance in a particular area or material.
2. **Detection** /dɪ'tekʃən/ (noun): The action or process of identifying the presence of something.
3. **Aerosol** /'ɛərəʊ,sɒl/ (noun): A suspension of fine solid or liquid particles in a gas.
4. **Filtration** /fɪl'treɪʃən/ (noun): The process of removing impurities or particles from a substance.
5. **Ventilation** /,ven.tɪ'leɪ.ʃən/ (noun): The provision of fresh air to a space particularly in buildings.
6. **Transmission** /trænz'mɪʃən/ (noun): The act or process of sending something from one place to another especially in the context of diseases.

Vocabulary quizzes



Multiple Choice (Select the Correct answer for each question.)

1. What term refers to the presence of a harmful substance in the environment?
Option: Infection
Option: Contamination
Option: Pollution
Option: Sanitation
2. Which process is essential for maintaining air quality in a closed environment?
Option: Isolation
Option: Filtration
Option: Ventilation
Option: Contamination
3. What is the term for the spread of a disease or infection from one person to another?
Option: Reception
Option: Transmission
Option: Conduction
Option: Reflection
4. Which type of treatment aims to alleviate symptoms or cure a disease?
Option: Preventative
Option: Therapeutic
Option: Diagnostic
Option: Prophylactic
5. What process involves the progressive loss of structure or function in neurons?
Option: Neuroinflammation
Option: Neurogenesis
Option: Neurodegeneration
Option: Neuroplasticity
6. What process confirms that research findings are accurate and reliable?
Option: Experimentation
Option: Validation
Option: Hypothesis
Option: Observation
7. What term refers to tiny particles or droplets suspended in the air?
Option: Solvent
Option: Aerosol
Option: Mist



Option: Vapor

8. What term describes the rapid increase in numbers especially of cells or organisms?

Option: Diminishing

Option: Proliferating

Option: Declining

Option: Ceasing

9. What is the body's response to injury or infection called?

Option: Hemostasis

Option: Inflammation

Option: Regeneration

Option: Debridement

10. What process is used to separate solids from liquids or gases using a filter?

Option: Circulation

Option: Filtration

Option: Evaporation

Option: Distillation

Gap-Fill (Fill in the blanks with the correct word from the vocabulary list.)

11. The yoga retreat offered a sense of _____ to its participants.

12. _____ is a highly toxic chemical compound that can be fatal.

13. Many plastics are made from long chains of _____ .

14. Her _____ at the meeting was greatly appreciated by all attendees.

15. The message was so _____ that no one could decipher its meaning.

16. His _____ skills in math earned him a scholarship.

17. The _____ of hostilities was agreed upon by both parties.

18. The caterpillar's _____ into a butterfly is a remarkable process.

19. A _____ diet can lead to various health issues.

20. The library has a _____ of resources available for research.



Matching Sentences (Match each definition to the correct word from the vocabulary list.)

21. The city was alive with people rushing to work showcasing a vibrant hustle.
22. He used modern technology for the detection of environmental pollutants.
23. The study of the metagenome helps researchers understand microbial diversity.
24. The scientist admired the beautiful crystalline structure under the microscope.
25. The reactivity of certain chemicals can lead to dangerous reactions.
26. The transmission of data over the internet has revolutionized communication.
27. Aerosol sprays can be harmful if inhaled in large amounts.
28. The validation of the study's results is crucial for scientific integrity.
29. The disease was especially prevalent in rural areas.
30. Humans have an innate need for companionship throughout their lives.

Answer

Multiple Choice: 1. Contamination 2. Ventilation 3. Transmission 4. Therapeutic 5. Neurodegeneration
6. Validation 7. Aerosol 8. Proliferating 9. Inflammation 10. Filtration

Gap-Fill: 11. serenity 12. Cyanide 13. polymers 14. presence 15. cryptic 16. exceptional 17. cessation
18. transformation 19. nutrient-deficient 20. plethora

Matching sentence: 1. hustle 2. detection 3. metagenome 4. crystalline 5. reactivity 6. transmission 7. aerosol
8. validation 9. prevalent 10. companionship

CATEGORY

- 1. Health - LEVEL5

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- 3. good ventilation
- 4. hospital air samples
- 5. Level 5
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7. sars-cov-2

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