



Undetected Bird Flu Cases in Humans Emerged in the US

Description

Recent blood analyses conducted on 115 dairy workers in Michigan and Colorado have illuminated previously undetected instances of highly pathogenic avian influenza (H5N1) affecting humans. A study by the US Centers for Disease Control and Prevention (CDC) revealed that 7 percent of participants tested between June and August 2024 exhibited antibodies indicative of exposure to this virulent strain.

Encouragingly, the findings suggest that the majority of those infected have not experienced severe health repercussions; in fact, half of the individuals who tested positive for antibodies reported no significant illness, indicating they may have encountered only mild symptoms.

Nonetheless, researchers express concern regarding the unchecked spread of the virus, which heightens its chances of mutation into more dangerous variants. Indeed, a troubling development has emerged in Cambodia, where at least three patients have succumbed to a hybrid strain of the virus, contracted from poultry. This variant—resulting from genetic reassortment between strains 2.3.2.1c and 2.3.4.4b—exhibits mutations that may enhance its capacity for airborne transmission and infection in mammals.

Fortunately, surveillance efforts indicate that the Cambodia outbreak remains contained, with no signs of human-to-human transmission thus far. In Canada, however, the first known human case of bird flu has been documented—a teenager currently in critical condition due to a mutated strain associated with the California dairy cow outbreak. Genetic sequencing has uncovered alterations in a specific gene linked to the virus's ability to infect humans.

Although this Canadian case appears to be isolated, such incidents underscore the dynamic nature of viral threats, necessitating vigilant monitoring and robust outbreak management. To date, there is only one recorded instance of bird flu with no discernible animal source, raising apprehensions about the potential for human-to-human transmission.

The CDC has emphasized the importance of personal protective equipment (PPE) in mitigating infection risks among dairy workers. Reports suggest that many workers involved in milking activities did not utilize appropriate protective gear, highlighting a gap in compliance with safety protocols.

Given the substantial impact of the highly pathogenic bird flu, which has led to the culling of over 90 million domestic birds in the US since 2022, strategizing effective vaccination programs and enhancing public awareness about hygiene practices during interactions with animals are imperative. Ongoing research efforts are crucial for the development of a human vaccine, reinforcing the need for a comprehensive public health response to this evolving threat.

The CDC's findings are published in the *Morbidity and Mortality Weekly Report*, accessible [here](#).



Vocabulary List:

1. **Pathogenic** /ˌpæθəˈdʒɛnɪk/ (adjective): Causing or capable of causing disease.
2. **Virulent** /ˈvɪr.jə.lənt/ (adjective): Extremely severe or harmful in its effects.
3. **Reassortment** /ˌriːəˈsɔːrtmənt/ (noun): The process by which genetic material is exchanged between organisms resulting in new combinations of genes.
4. **Mutation** /mjuːˈteɪʃən/ (noun): A change in the genetic structure of an organism which may result in altered characteristics.
5. **Surveillance** /sərˈveɪləns/ (noun): Close observation especially of a suspected spy or criminal.
6. **Proficient** /prəˈfɪʃənt/ (adjective): Competent or skilled in doing or using something.

Comprehension Questions

Multiple Choice

1. What percentage of dairy workers tested between June and August 2024 showed antibodies indicative of exposure to highly pathogenic avian influenza (H5N1)?

- Option: 3%
- Option: 5%
- Option: 7%
- Option: 10%

2. Where was the first known human case of bird flu documented?

- Option: Michigan
- Option: Colorado
- Option: Cambodia
- Option: Canada

3. What mutation has been observed in the hybrid strain of avian influenza contracted from poultry in Cambodia?

- Option: 2.3.2.1a
- Option: 2.3.4.4a
- Option: 2.3.2.1c
- Option: 2.3.4.4c



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4. What is emphasized by the CDC for mitigating infection risks among dairy workers?
- Option: Use of personal protective equipment (PPE)
 - Option: Increased milking activities
 - Option: Avoiding vaccination programs
 - Option: Enhancing public awareness only
5. How many domestic birds have been culled in the US since 2022 due to highly pathogenic bird flu?
- Option: 50 million
 - Option: 70 million
 - Option: 90 million
 - Option: 110 million
6. What is crucial for the development of a human vaccine against avian influenza?
- Option: Regular hand washing
 - Option: Social distancing
 - Option: Ongoing research efforts
 - Option: Vitamin supplements

True-False

7. The majority of individuals infected with highly pathogenic avian influenza experienced severe health repercussions.
8. The variant of avian influenza in Cambodia exhibits mutations that enhance its capacity for airborne transmission.
9. The Canadian case of bird flu is associated with the California dairy cow outbreak.
10. There have been multiple instances of bird flu with no animal source recorded to date.
11. The CDC's findings on avian influenza were published in the Morbidity and Mortality Weekly Report.
12. The containment of the Cambodia outbreak has shown signs of human-to-human transmission.

Answer

Multiple Choice: 1. 7% 2. Canada 3. 2.3.2.1c 4. Use of personal protective equipment (PPE) 5. 90 million
6. Ongoing research efforts

True-False: 7. False 8. True 9. True 10. False 11. True 12. False



Vocabulary quizzes

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

1. Which term refers to an organism that can cause disease?
Option: Pathogenic
Option: Virulent
Option: Reassortment
Option: Mutation
2. Which term describes someone skilled or competent in a particular activity?
Option: Proficient
Option: Encoding
Option: Synthesis
Option: Biological
3. Which term relates to a substance dispersed evenly in another substance at a microscopic level?
Option: Dissipation
Option: Colloidal
Option: Gradient
Option: Efficiency
4. Which term indicates the ability to be maintained at a certain rate or level?
Option: Projections
Option: Sustainable
Option: Elucidated
Option: Neurodegenerative
5. Which term suggests something prepared or made ready for a specific purpose?
Option: Hypothetical
Option: Morphology
Option: Primed
Option: Ameliorate
6. Which term refers to the presence of an unwanted or harmful substance?
Option: Pathogen
Option: Microbiome
Option: Contamination
Option: Proliferate
7. Which term means to completely destroy or get rid of something?



- Option: Thoroughly
- Option: Eradicate
- Option: Optimization
- Option: Dissipation

8. Which term describes a change in genetic material that can lead to variations?

- Option: Pathogenic
- Option: Virulent
- Option: Mutation
- Option: Surveillance

9. Which term relates to conditions that involve progressive damage or loss of nerve cells?

- Option: Biological
- Option: Mechanism
- Option: Retrievable
- Option: Neurodegenerative

10. Which term refers to the action of making something as effective or functional as possible?

- Option: Projection
- Option: Retrievable
- Option: Optimization
- Option: Ameliorate

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

11. In virology _____ refers to the mixing of the genetic material of different strains.
12. The _____ of the new manufacturing process improved productivity by 30%.
13. The financial _____ for next year show a promising increase in revenue.
14. Efforts to _____ the impact of climate change are crucial for future generations.
15. Understanding the _____ behind cellular communication is essential for medical research.
16. The river flowed downhill following the natural _____ of the landscape.
17. The _____ of proteins within cells is a complex biological process.



18. DNA carries the genetic information through the process of genetic _____.
19. The researcher presented a _____ scenario to explore alternative outcomes.
20. Under optimal conditions bacteria can _____ rapidly.

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

21. Public health officials use ongoing monitoring to detect and track disease outbreaks.
22. The study focused on the impact of environmental factors on various species.
23. The information stored in the database is easily accessible and can be retrieved at any time.
24. The heat energy gradually dissipated into the surrounding environment.
25. The virus strain was identified as highly contagious and harmful.
26. The complex scientific theory was explained in a clear and detailed manner.
27. The study of the bird's unique physical structure revealed insights into its evolution.
28. The experiment was conducted to ensure accurate and reliable results.
29. A random change in the genetic code led to a beneficial in the plant species.
30. The doctor identified the specific responsible for the patient's illness.

Answer

Multiple Choice: 1. Pathogenic 2. Proficient 3. Colloidal 4. Sustainable 5. Primed 6. Contamination 7. Eradicate 8. Mutation 9. Neurodegenerative 10. Optimization

Gap-Fill: 11. Reassortment 12. Efficiency 13. Projections 14. Ameliorate 15. Mechanism 16. Gradient 17. Synthesis 18. Encoding 19. Hypothetical 20. Proliferate

Matching sentence: 1. Surveillance 2. Biological 3. Retrievable 4. Dissipation 5. Virulent 6. Elucidated 7. Morphology 8. Thoroughly 9. Mutation 10. Pathogen

CATEGORY

1. Sci/Tech - LEVEL5

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