Q&A: Expert explains public health concerns on avian flu

May 15 2024

Jeremy Luban, MD. Credit: University of Massachusetts Medical School

The presence of the highly pathogenic avian influenza (H5N1) virus in dairy cattle and milk has put public health experts on high alert.

In a recent interview for UMass Chan News, physician-scientist Jeremy Luban, MD, the David J. Freelander Memorial Professor in AIDS Research and professor of molecular medicine, provided key insights and perspective on pressing concerns.

Why is avian flu considered a top concern among infectious diseases?

The highly pathogenic avian influenza, commonly known as avian flu or bird flu, has long been on the radar of health experts due to its potential to cause severe illness in humans. Of the known human infections with H5N1, half were lethal.

That being said, almost all of these human cases resulted from direct contact with poultry. In other words, H5N1 does not easily spread person to person, and therefore, in its current form, is unlikely to cause a pandemic.

What is alarming now is that H5N1 is spreading cow to cow. This is of concern since cows are mammals like us, and there is the potential that H5N1 will change in a way that would permit it to spread person to person, making a pandemic possible.

What do we currently know about avian flu and its spread?

Avian flu is widespread across the planet, facilitated by the migratory patterns of birds. The vast majority of H5N1 cases in mammals involve direct transmission from birds to mammals. For example, carnivores like foxes have probably been infected by eating bird carcasses.

Human cases have involved direct contact with infected poultry. Cows probably became infected via direct contact with infected birds or with cattle feed that had been exposed to birds. How H5N1 spreads from cow to cow is unknown.

What are the implications of avian flu adapting to

mammals?

To date, there has been no evidence of widespread human-to-human transmission. There have been a few examples of H5N1 genomes acquiring mutations that would facilitate infection of humans or other mammals.

If the virus spreads from mammal to mammal, as it is doing in dairy cows, it has potential to acquire more mutations that will make human-to-human transmission more efficient, and a pandemic more likely. It is very important that we monitor closely for any signs of such adaptations and to be prepared with effective countermeasures.

What about the risk of transmission through dairy consumption?

A survey of milk from around the U.S. has found that one out of five samples tested positive for H5N1 genetic material. This test detects viral RNA, not infectious virus. As it turns out, flu viruses are efficiently killed by heat like that used in pasteurization. Attempts to culture infectious virus from milk samples that tested positive for H5N1 RNA have all been negative.

This is good news, indicating that pasteurized milk is safe. We do not know if drinking unpasteurized milk puts you at risk for H5N1 infection. Similarly, we do not know if exposure to unpasteurized milk by farm workers puts them at risk for infection.

What progress has been made in vaccine development for avian flu?

Promising prototype H5N1 vaccines already exist, but they have not

undergone comprehensive testing for real world effectiveness in people. Another caveat is that, to become a human pandemic virus, H5N1 would need to acquire mutations that might decrease the effectiveness of any current prototype vaccines.

Finally, even if we know the design of a perfect vaccine, we will need to scale up production of the vaccine so that enough people can be vaccinated, and such vaccine production will require funding from Congress.

Are antiviral medications like Tamiflu effective against H5N1?

We are monitoring the H5N1 sequences to see if the virus acquires mutations that would make it resistant to antiviral medications. To date, the H5N1 strains that are infecting dairy cows are sensitive to current antiviral medications. The U.S. government has stockpiles of these medications.

If H5N1 started spreading person to person it would be important to distribute the drugs quickly, especially because the drugs are only effective if given within 48 hours after a person develops symptoms of an infection.

Why haven't we seen cases of avian flu in European dairy cows?

The absence of reported cases of H5N1 in dairy cows in Europe could be attributed to various factors. The cows in the U.S. are infected with a genetic subvariant of H5N1 called B3.13 that is more common in birds in the U.S. than in Europe. Experiments in the lab may determine whether B3.13 has mutations that enable H5N1 to better infect cows.

Another possible explanation is differences in animal husbandry, including transport of lactating cows or feeding practices.

What actions are being taken to address the potential threat of avian flu?

Organizations like the Massachusetts Consortium on Pathogen Readiness, or MassCPR, are actively engaged in discussions and planning to mitigate the risk of avian flu. This includes hosting symposiums to communicate what we know about H5N1 and strategy sessions so that clinicians, researchers and public health entities are better prepared should the virus acquire mutations that enable it to spread person to person.

While the current risk of an H5N1 pandemic may be low, experts are taking the threat seriously and working behind the scenes to stay ahead of a potential outbreak.

Provided by University of Massachusetts Medical School

Citation: Q&A: Expert explains public health concerns on avian flu (2024, May 15) retrieved 26 June 2024 from https://medicalxpress.com/news/2024-05-qa-expert-health-avian-flu.html