Bird flu risk to people is low despite recent animal infections. But what would it take to cross over to humans?

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Right now, the average person has very little risk of contracting bird flu, but whether that could change at some point depends on whether two

viruses meet in the wrong animal.

The virus currently circulating is a strain of H5N1 flu (the letters and numbers refer to certain proteins on its surface). It's highly lethal in chickens and other poultry, and millions of birds have had to be euthanized in Colorado and across the nation after their flocks were infected. That's a major factor in the sharp increase in egg prices in recent months.

Only a handful of human cases have been reported, all in people who worked with poultry or had backyard flocks. This type of H5N1 isn't well suited to spread between humans, but it has infected other mammals.

One human in Colorado tested positive last year, but health officials weren't sure if the person was truly infected, or if some virus particles just hitched a ride in their nose. The person, who worked with poultry, reported fatigue was their only symptom and recovered fully.

More recently, a black bear, a skunk and a mountain lion died of H5N1 in Colorado. All were believed to have eaten dead birds.

"That doesn't mean that the virus has changed (to infect mammals more easily), it means it was a very intense exposure," state epidemiologist Dr. Rachel Herlihy said. "There don't appear to be changes that allow it to spread more easily between humans."

What is H5N1?

The virus that's spreading now is a strain that was first found in the Netherlands in 2020. As of December, the World Health Organization had collected reports of six human infections with this particular virus: the Colorado case, three others that were asymptomatic or mild, one that

was severe and one that was fatal.

Genetic sequencing from those six cases didn't show any signs the virus had picked up mutations that would be useful in spreading between humans.

Other species that have gotten infected around the world include a badger, bobcat, coyote, dolphin, ferret, fisher cat, fox, lynx, opossum, otter, pig, polecat, porpoise, raccoon, raccoon dog and multiple minks and seals.

Before 1997, when there was an outbreak of a different H5N1 virus in Hong Kong, it was believed bird flu couldn't jump to humans, said Gary Butcher, a professor at University of Florida who studies poultry viruses.

Since then, several other avian influenza viruses have sporadically affected people, but none has come close to starting a pandemic. It's likely the same thing has happened throughout human history, but wasn't recognized until we developed genetic sequencing, he said.

"The bird flu wasn't anything new," he said.

Since 1997, 880 people were confirmed to be infected with that form of H5N1, and about half died. That's a small number, but an incredibly high rate—though it's possible that people who weren't as seriously ill never sought testing and didn't find out which flu strain they had. Most of those infected worked with poultry, though there was some limited transmission within families that shared genetic risk factors, Butcher said.

The seasonal flu has killed an estimated 18,000 people in the United States since October, according to the Centers for Disease Control and Prevention. Most years, it kills 30,000 or more.

Why are people worried now?

While most of the mammals that got sick from the virus seem to have eaten dead birds, it appears that minks on a farm in Spain and seals swimming off New England spread it to each other. No humans were infected in either outbreak, but the spread raised fears that the virus is getting better at moving between mammals.

The concern is that the way we raise animals in tightly packed facilities helps a virus to spread, giving it more chances to pick up mutations that would allow it to jump to humans, said Dr. Jon Samet, dean of the Colorado School of Public Health. While that hasn't happened with this particular virus, there were cases where farmed minks caught the virus that causes COVID-19 and passed mutations on to their keepers, he said.

Avian influenza binds best to a receptor that's very common in birds, but significantly less so in humans, Butcher said. For it to spread efficiently between humans, it would have to get better at attaching to receptors that are more common in our noses and throats, which hasn't happened so far, he said.

The main way bird viruses could become better adapted to humans is if a pig were to be infected with both avian and human influenza, Butcher said. Swine have receptors that overlap with both birds and humans, and if a pig were infected with both, the viruses could swap genes and gain the ability to infect the other species, he said. The same thing could happen if a person who was infected via direct contact with a bird also happened to have the seasonal flu.

"Anything is possible, but (the risk) is less than negligible," he said.

It's difficult to say exactly how high or low the risk of that kind of event is, Herlihy said. Public health officials can track incremental changes in

a virus's genes—like those seen in different variants of the virus that causes COVID-19—but it's harder to predict if an "unlucky" pig will get infected with two flu strains that swap genes, she said. The current theory is that the 2009 H1N1 flu was caused that way, with a pig getting infected with different swine flu viruses at the same time.

"There's certainly always the potential for influenza to cause pandemics, but it's really difficult for us to speculate," she said.

What should I do?

Last week, the Colorado Department of Public Health and Environment reminded the public to avoid direct contact with wild birds, which can carry the virus without getting sick themselves. If you see a dead bird, don't touch it, and notify your local parks and wildlife office if you see three dead birds in the same area within two weeks.

People should also try to avoid bringing bird feces home on their shoes or clothes, and keep their pets away from birds, the state health department said. Poultry owners should monitor their flocks for signs of illness, make sure wild birds can't get into their flocks' feed and take steps to shield poultry from wild birds' feces, it said. Sick poultry should be reported to the State Veterinarian's Office.

People who have been exposed to sick or dead birds should monitor themselves for 10 days and call a health care provider if they develop a fever, difficulty breathing, cough, sore throat, runny or stuffy nose, body aches, headache or fatigue.

It's generally a good idea to avoid contact with wildlife and keep your pets away from wild animals, but it's especially so now that H5N1 is circulating in more bird species than is typical, Herlihy said.

What are health officials doing?

The World Health Organization recommended that countries monitor the virus and that health care providers consider avian influenza as a possibility if they see people who spent time with poultry come in with flu-like symptoms.

The United States does have a bulk supply of a vaccine for H5N1, though whether it makes sense to convert that into doses in vials when there's no imminent danger to most people depends on the shelf-life, Samet said. The vaccine isn't specific to this particular strain, but would be expected to offer some protection, especially against severe illness.

"I don't think it's a threat to most of us right now," he said.

Butcher said he doesn't believe it makes sense to prepare for pandemic H5N1 when there's no risk to large numbers of people.

The current outbreaks in birds will burn out once there aren't enough susceptible wild birds left, allowing farmers to rebuild their flocks and prepare for the next flu season, he said. (Others, including Indiana's state veterinarian, think the virus may be widespread enough that it won't follow the usual seasonal pattern along wild birds' migration routes.)

"You can't spend millions of dollars on something that kills 24 people a year," he said. "This is just a cycle of nature."