

How concerned should we be about bird flu?

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Now two years in, the global avian flu outbreak has devastated wild and domestic bird populations, leapt into various species of mammals, and cost governments and farmers billions as consumers feel the pain in their grocery bills. Despite containment efforts, the record-breaking outbreak—caused by a highly contagious new variant of H5N1—shows no signs of slowing as migration season looms.

While the virus so far has not posed significant threats to humans, many unknowns remain as it continues to evolve, according to Johns Hopkins epidemiologist and environmental microbiologist Meghan Frost Davis. "What we know about [flu strains](#) is that they're constantly changing. Our influenzas have the potential to become epidemics or pandemics," she says. "So that's what we keep at the back of our minds."

In particular, the jump from birds to mammals—including foxes, bears, mink, whales, and seals—is "significant and something to pay attention to," says Davis, an associate professor in [environmental health](#) and engineering at Johns Hopkins University's Bloomberg School of Public Health. "What people may not remember from high school biology is that there are larger differences between birds and mammals than there are among mammals, so finding the virus in mammals indicates an expanded host range."

Davis recently spoke with the Hub about the current state of the [outbreak](#) and its global reverberations.

What can you tell us about the extent of this outbreak?

What we're seeing is an epizootic—the term we use for an epidemic, but with animals—happening in wild birds in many parts of the world, which has caused a record-breaking outbreak of avian flu in domestic poultry, including chickens and turkey raised for meat and eggs, as well as backyard poultry kept for the household or as pets. So the outbreak is of great concern for [animal health](#), starting with the poultry especially. But now we've also seen it detected in a number of other animals, including mammals. And it's shown up in a very small number of people globally.

What makes this avian flu outbreak stand out from

other similar ones of the past?

What we more typically see with outbreaks in animals is that they'll surface and then go away, usually within the space of a season. What's unusual about this one is that it's been going on for some time, starting sometime in 2021, with various sub-strains developing. It's been persistent and widespread, and now has affected an estimated 58 million birds in the United States and more globally.

What usually happens to prevent these outbreaks from spreading further is going to commercial flocks to depopulate them. So remove the animals, then wait out the viability of the virus in the local environment. They'll do a good cleaning to make sure everything's good, then repopulate the flock.

These [control measures](#) aren't enough to contain the current outbreak. That's pretty significant because we're not just talking about the loss of animal lives, which is tragic, but we're talking about widespread impacts to our [food systems](#) and our ecosystem, not to mention the commercial and psychosocial impacts on people raising the animals. This can all be quite devastating.

Why is it significant that the avian influenza has shown up in mammals?

From a public health perspective, we're perennially concerned about any infectious agent that has potential to move from one species to another species, and in particular from an animal species into a human. And if that becomes the kind of virus that can transmit human-to-human, that's where we see outbreaks, epidemics, or even pandemics. Of course the SARS-CoV-2 virus that caused the COVID-19 pandemic is one example of this, and we're still struggling with it.

What level of concern is there that this could spread more widely among humans?

Thankfully with the current outbreak we've seen fewer than 10 human cases documented, one of those in the United States. And we've been doing targeted surveillance of people who have been in contact with positive birds, which was the case for the individual in the U.S., who experienced mild symptoms for a few days. Surveillance is key to catching these groups with potential exposure, who could help us identify and track new strains.

With the current strains circulating, we haven't seen high risk to humans—so that's reassuring, right? However, what we know about flu strains is that they're constantly changing. This is why our seasonal influenzas have the potential for epidemics or pandemic strains. Those are the worst-case scenarios we imagine.

Even though the number of cases in humans from this outbreak is small, the recent death of a girl in Cambodia shows how severe the disease can be.

You mentioned depopulation as a control method. What are other methods to limit the spread of bird flu?

With the wild bird population, clearly it's not really possible to control it. But as far as what individuals can do, you'll hear advisories for people to disinfect bird feeders, or to not use bird feeders or bird baths at all because you don't want congregations of birds. For people who deal closely with birds, wear N95 masks, and if you suspect an animal might be sick—maybe they're not eating or drinking well, maybe you see discharge around the eyes, or unkempt feathers—it's time to call your

veterinarian or potentially also contact appropriate state agencies.

With domestic poultry, some of these flocks are hundreds of thousands of birds, so once the virus gets into the flock, it can spread quickly. In these facilities, prevention focuses on biosecurity and biocontainment. Basically, you stop any new elements from coming into a large farm, for example. You disinfect, you limit visitors, you try to enclose the facilities. Even with backyard flocks these principles can be used—you isolate chickens in coops.

Different states may have different agencies or groups handling this kind of thing; for example in Maryland we have an extension service through the University of Maryland as well as the state Department of Agriculture monitoring this situation and taking action. It's something that's on the radar and a high priority for the poultry industry as well as for animal health professionals.

What about vaccines? What role could they play here?

With human vaccinations, we have expert groups come together to decide which strains to include in our seasonal flu vaccines. Right now, there's no reason to believe that these avian influenza strains will rise to the need to be included in our decision-making over human vaccines. We'll see if that changes.

With animal vaccination, there are two different considerations: How effective is it in preventing disease, and is it economically feasible? We tried this with COVID-19 vaccines for animals and found that the cost-benefit ratio wasn't really where it should be. With the bird flu, I'm not certain these questions have been fully addressed to the point where an effective vaccine could be brought to market. To my knowledge, there is no widespread deployment right now of vaccines for poultry.

Should we be concerned about impacts to our pets, i.e. cats that interact with birds?

There have been rare cases where avian flu has been found in pet animals such as cats and dogs. The basic advice is to prevent contact with wild birds. Since outdoor cats can sometimes hunt wild birds, this could lead to exposure, so you'd want to keep them indoors to decrease risks. I worry more about pet birds, including those that are indoors but might have indirect contact with [wild birds](#) through a screened window or door.

What misunderstandings do you think may exist about the bird flu?

The biggest thing I've been hearing is how upset and horrified people are about the price of eggs going up—which, yes, is an economic issue related to this avian influenza outbreak. But I think many general consumers aren't fully comprehending or appreciating just how complex our food systems are and how something like this can impact supplies coming into the market and their price points. To me this really illustrates how vulnerable our food system is and the value of investing in animal health—research and resources that look at the entirety of the food system and try to build as resilient a structure as possible.

The challenges we face with animal health diseases aren't limited to avian flu. For example, almost a decade ago, porcine epidemic diarrhea (PED, a coronavirus) caused a major outbreak that impacted pork production. Right now we're seeing African Swine Fever causing disease in pigs around the world, though it hasn't yet been identified in the U.S. There are major efforts underway to try to prevent introduction of this virus and to protect animal health and the food supply.

How closely is human health connected to animal health and well-being?

I think the bird flu gives us a window into how animal diseases broadly impact human health and all the different pathways for that to occur. After COVID-19 we're all sensitized to the possibility of a virus in [animals](#) spilling over into humans. That's not something we want to happen, but it's something that we now understand occurs more frequently than we once thought.

But when we think about these animal diseases, we shouldn't limit our concerns just to the possibility of human infection. There can be major global impacts regardless—affecting our food systems, our livelihoods, and causing major disruptions to our ecosystems. Healthy ecosystems can support cleaner air and cleaner water and also can help mitigate impacts from flooding or extreme weather events. If we can't understand and respect the way all of this works together, we'll lose many of these benefits and human populations will certainly feel impacts in one way or another.

Provided by Johns Hopkins University

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