Episode Title: Avian Influenza

Summary: In this episode, we are talking about Highly Pathogenic Avian Influenza (HPAI), also known as “bird flu.” It is a highly contagious disease that is currently circulating in the United States among birds. As of April 5, 2022, there have been no reported human cases. According to the CDC, these avian flu viruses spread naturally among wild aquatic birds and can infect domestic poultry. It is highly contagious among birds and is often fatal to chickens and turkeys. We talk with Renee Anthony and Matt Nonnenmann from the University of Iowa about what poultry farmers can do to protect themselves from the virus and other hazards they might be exposed to while culling flocks or decontaminating farms and vehicles.

“I think we need to look at the whole continuum of exposures that operators may have during this outbreak.” – Renee Anthony, GPCAH Director

Expert: Renee Anthony and Matt Nonnenmann

Episode Quote:

“As of right now, it’s an animal health problem and we don’t want it to become a human health problem.”

– Matt Nonnenmann, PhD, University of Iowa

Transcript

00:04 K. Crawford

Welcome to the FarmSafe Podcast brought to you by the Great Plains Center for Agricultural Health. Today we are talking about Highly Pathogenic Avian Influenza (HPAI), also known as “bird flu.” It is a highly contagious disease that is currently circulating in the United States among birds. As of April 5, 2022, there have been no reported human cases. According to the CDC, these avian flu viruses spread naturally among wild aquatic birds and can infect domestic poultry. It is highly contagious among birds and is often fatal to chickens and turkeys. My guests today are two researchers who worked with the Great Plains Center to create resources on avian influenza in 2015 when we last saw this virus circulating in the United States.

00:47 R. Anthony

I’m Renee Anthony, I'm faculty at the University of Iowa College of Public Health and my expertise is in the field of industrial hygiene and occupational safety.

M. Nonnemann

Hi, I'm Matt Nonnemann and I'm faculty from the College of Public Health at the University of Iowa. And my expertise is also in health protection, industrial hygiene and my research interest is in controlling virus aerosols.

01:11 K. Crawford

Thank you both for being here today. As our listeners may be aware, the United States is in the middle of another Avian influenza outbreak. I’m looking at numbers reported by the USDA on April 4th, and they are reporting that avian influenza has been detected and confirmed in 118 flocks (72 commercial and 46 backyard flocks) within 24 states and has affected over 22 million birds. Today we wanted to talk about this and share some resources on keeping poultry farmers and those handling these birds safe.

So, to get started, Matt, you do work with controlling viruses in agricultural settings. Could you give us a little background on avian influenza and perhaps talk about how it’s spread?

01:53 M. Nonnemann

Influenza often moves through wild birds, so waterfowl, and waterfowl migrate, they have their annual migration around the world. So, viruses are transmitted among the birds, and then, the picture may get a little bit fuzzy after that.

I think this this virus was identified in January; I believe it was a blue-winged teal duck that was harvested by hunters in– I think it was South Carolina. And so that's where it was first identified through just surveillance sequencing and then of course it's been identified in backyard flocks, in chicken flocks, and in commercial flocks, like turkeys, and pullets, and egg layers.

02:35 K. Crawford

What are the health risks for people working in these environments? People that are working with poultry, are they at risk of contracting this virus?

M. Nonnemann

Yeah, absolutely. I mean they are at risk of being exposed. And then the question is, are humans infected by this virus in a way that could result in disease and/or sustained transmission from human to human. Those are the real concerns and real questions.

K. Crawford

OK, at risk of being exposed. So, when does that occur?

03:05 M. Nonnemann

Basically, that's any sort of animal handling. If you find a dead animal, you touch it, pick it up and don't wash your hands or don't wash your clothing or touch other things, or if you buy animals and bring them to your home, or your flock, or if your domestic animals intermingle with wild waterfowl on your property, or you know that sort of thing. And I know on the commercial side we're pretty good about that. I mean the biosecurity really focuses on pest control and keeping the animals that don't belong inside the buildings outside of the buildings. But of course, you know people move on and off the farm, and so you could, you know, meet someone and greet someone at a feed store, you know, who has a backyard flock that may be infected. Or you may walk into a gas station and get a cup of coffee and somehow exchange some manure on your boots or something like that. I mean who knows, right? The variables are a little endless.

K. Crawford

What recommendations do you have for folks working with poultry? How can they protect themselves?

04:07 M. Nonnemann

So, there's some really great resources available through the Great Plains Center and also through CDC recommendations for worker protection, and use of personal protective equipment. Things I mentioned earlier:

1. Avoid unprotected direct contact with sick birds.
2. Avoid unprotected direct physical contact with material that sick birds that were near or on, like litter, or transport facilities or vehicles.
3. Wear recommended personal protective equipment. That would include safety glasses and barrier clothing, and also respiratory protection, like a properly fitted N95 respirator. There are also other more advanced options like air-purifying respirators, or PAPRs, we call them.

And also, I think really basic administrative things, like:

4. Avoid touching your eyes, mouth, nose, with any contaminated material while you're wearing personal protective equipment.
5. Don’t eat, drink, or smoke when you’re using personal protective equipment.

And then the cleaning, right? So how you remove your personal protective equipment, be careful how you do that. You want to work from the outside in.

6. And handwashing, and wash[ing] your body after you’ve been handling things that could potentially have the virus in them.

7. And of course, self-monitoring around animals in general. And then if you're around animals that you think are sick and you're having to handle them, pay attention to how you feel up to 10 days or so after. Because often we don't know if the virus can easily infect humans, and we learn that over time.

And I think we talked earlier, but I think, as of now there's no human cases that have been documented with this specific virus. So, we haven't found any human cases so far, so that's a good thing, but animals are getting sick and they're harder to manage.

05:57 K. Crawford

This actually ties into my next question and Renee, maybe you have some thoughts on this. When we talk about managing this, we're talking about decontamination and culling and composting. Can you talk about the hazards that might be associated with that side of things?

06:15 R. Anthony

Absolutely. So, I think we need to look at the whole continuum of exposures that operators may have during this outbreak. Hopefully, everybody is at that monitoring of bird health phase, right? So we don't know if our flocks are sick, so we take that extra step of precaution, and, you know, put on personal protective equipment, and you know, simple, disposable gloves, N95 respirators, or you know those disposable strapped masks– a little bit more than the KN95 since we really do want to make sure that we have a respirator that is sealed across somebody's face when we're dealing with this situation. Also, we may have some foot protection and some coveralls and things that we want to be able to take off and dispose of once we come out of a potentially infected area.

Once we notice that there is some avian flu, and that we have to start dealing with our flocks, then we take on a lot more activities and more interaction with our birds. And so, we really want to look at if we're doing depopulation and doing say composting on site. We did that a lot back in the last outbreak. We not only have now these aerosols, bioaerosol particles, but now we have a lot of other dusts. We may have some vehicles involved, and as these birds decay, we also generate a lot of ammonia.

So, instead of just using an N95 respirator, we need to move up, probably to a full-faced chemical respirator in order to protect both our eyes and our lungs from this ammonia. And Matt was out in the fields last time, and did some ammonia monitoring, and all of the monitors, you know, peaked at a 100, and those are pretty high concentrations that really start to impede our ability to see and really stay in those areas for a long period of time. So, we're really looking at much more advanced respirators that if you're applying ammonia in the field, you should have one of those in your vehicle, doing some crop applications, so it's the same level of protection to really protect your lungs as well as your eyes during that depopulation or composting of the birds.

And then once we go in and start doing some cleaning and disinfecting in those areas, then we have to really look at matching our personal protective equipment with those chemicals that we're using so it's, not just protecting us from spreading potential infection but protecting ourselves from those chemicals, and that's where the safety data sheets is really going to help us find the most appropriate gloves to use so that we don't develop skin rashes and burns and those sorts of things when using, especially the concentrated versions of those chemicals.

08:58 K. Crawford

Great information. You've both mentioned respirators and ensuring fit. Can you talk a little more about that?

09:05 R. Anthony

Fit is really important. Throughout the pandemic, if people have worn those masks and find that their glasses are fogging, that's because they don't have a good fit. And when we're dealing with these sorts of chemicals, and risks on the farm, we really want to make sure we have a good fit. So even for the disposable N95 things that just fit over your face, you want to be clean shaven, and there is a qualitative fit test procedure to undertake. We have trained folks throughout the region. We've trained health care providers to do fit testing for our rural folks. But if you need some more information, we can also share those resources. So, there's a qualitative test where you're looking to sense either a sweet taste or a bitter taste. There are also some more quantitative tests where we'll hook you up with a machine and kind of measure inside your mask and outside your mask to make sure that when you're wearing a respirator and talking and moving around, like you would when you're out in the fields, that you don't have any

leaks, so you don't have chemicals coming into your breathing zone inside of that mask. Matt, do you want to try a better explanation?

10:18 M. Nonnemann

No, I mean I think you hit all good points there. You said it, right? The important thing is being clean-shaven and making sure you have something that fits. And so that takes a little time, you know to make sure you have something that fits, and I think that's really important. You know, not just running to the store, and throwing it on and thinking you're adequately protected. Because one thing that we very rarely know is, thinking from the transmission standpoint, how much virus can you be exposed to and develop disease. So, taking a precautionary approach is important, especially if you're dealing with a pathogen that's changing. It's how influenza works right? It's transmitted among a certain group of animals, and then over time, just either randomly or through natural selection, you know the virus can evolve to infect other animals, and so sometimes that's people. And then, even in a small group of people the virus can still evolve to get better at infecting people, and so we don't want that to happen. And so, if you can reduce your exposure as low as you can, so that you reduce the likelihood the virus can better adapt to people. I think it's just overall a good approach when you're in an environment where you know there's virus.

11:39 R. Anthony

If you have respirators on site, and even if you just can't find somebody to do fit testing, if you look at the materials of the manufacturer provides there should be on the box or on the container what's called a fit check, and so it's a positive and a negative pressure check where you put the respirator on, you tighten it so that it's on and it's comfortable, and then you cover up any exhalation valves and slightly breathe out, and you want to make sure that you're not feeling air coming out. You want to feel that the respirator is still pretty tight on your face. Then you do the same thing, and you breathe in, and you should– it's a really slight suction feel that you have when you do that inhalation fit check, but you really learn a lot by just doing those two checks every time. You put this on just to make sure the that it snug and fits you today, at that moment in time.

12:34 K. Crawford

I'm glad you brought that up and I do want to point out that one of the resources we will link to is a guide on personal protection equipment for avian influenza. I think you both worked on this back in 2015, and it includes information on a lot of what you've been talking about with these respiratory exposures, and respirator use information. It also has resources and links including a video of someone performing one of those fit checks that you just mentioned. So, we will include that in our episode resources section.

Any other thoughts?

13:06 M. Nonnemann

One thing I wanted to point out, I think this is important too. This Avian influenza is likely different than the seasonal influenza that everyone had the opportunity, at least, to get vaccinated for. And so don't believe you're protected just because you had a seasonal influenza vaccine. These vaccines are designed, the seasonal one, for four specific viruses, a quadrivalent vaccine, and to my knowledge this H5N1 virus was not included in that seasonal vaccine. So that's pretty important I think to understand that if you're getting ready to work in an environment where you think, okay, we may have an outbreak here, you know, protect yourself using the approaches that we've described and don't rely on your seasonal influenza vaccine to protect you.

13:56 R. Anthony

So, it's important that right now, in April, this virus is pretty much an animal health issue. But keep informed from both CDC, as well as the USDA, who are tracking this to see, you know, if it does mutate at all and become a human pathogen, then we need to really bump up our precautions, and it becomes a much bigger problem. But right now, as we're still in the animal health issue realm, the recommendations may seem you know, overly precautious, but we don't want to transfer any of this virus that now you may be actually carrying and not infected in and carrying out to other flocks or getting it out into the environment where another bird is going to pick it up and then infect yet another set of flocks. So do keep in touch with what's going on with the CDC's web page as well as the USDA's web page to see if recommendations change over time and we'll be glad to come back on and have another conversation.

14:58 M. Nonnemann

It's a great point, Renee, and I don't want to cause a lot of anxiety. It's still an animal health issue. So, bird flu infections among people are rare, but of course, thinking several steps back you know to the quote spillover event of a virus that's circulating in animals spilling over into humans, we don't want that happen and so I think it's a precautionary approach like how we're describing this. As of right now, it's just an animal health problem and we just don't want it to become a human health problem.

15:31 K. Crawford

Check out the links provided in the episode resources section of our website which include links to the USDA and CDC webpages on avian influenza. There's information there to keep you updated on cases and best practices for staying safe.

R. Anthony

Visit us on the FarmSafe podcast to join in the conversation about keeping safe on the farm.

K. Crawford

We want to hear from you. Share your stories about health and safety issues on the farm, about injuries that made you change the way you work, or about the ways you keep yourself and others safe on your farm. Also let us know if there are any topics that you want to hear about on the air. You can visit our website at gpcah.org or email us.

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Episode Resources

- CDC: Bird Flu Current Situation Summary
- USDA: Highly Pathogenic Avian Influenza
- 2022 Confirmations of Highly Pathogenic Avian Influenza in Commercial and Backyard Flocks
- Avian Influenza PPE Guidelines

Photo