



**DEFEND THE FLOCK**  
**Navigating Avian Influenza: Your Questions Answered**  
**February 28, 2023**

Today I am joined by Dr. Patricia Fox, National Epidemiology Officer for the Poultry Health Team at USDA APHIS.

**Moderator (Susan Cohen) >>** Dr. Fox leads the preparedness, surveillance, and response activities for the U.S. Avian Influenza program and is also an instructor of epidemiology training workshops for veterinary professionals in the surveillance and control of avian influenza around the globe. Thank you for joining us today, Dr. Fox.

**Dr. Fox >>** Thank you for having me. I'm happy to be here.

**Moderator >>** I'm also pleased to introduce Dr. Maggie Baldwin, state Veterinarian and Director of the Animal Health Division at the Colorado Department of Agriculture. Dr. Baldwin is responsible for animal health and disease control activities and formerly served as a veterinary medical officer with USDA APHIS during the 2014-2016 HPAI outbreak. Dr. Baldwin thank you for being here with us today.

**Dr. Baldwin >>** Thanks so much Susan. Happy to be here.

**Moderator >>** A few housekeeping items to share before we start... Real time streaming captions are available for this program. To view, click on the CC in the bar at the bottom of the screen OR for customizable captions, type the Caption URL that you see on this slide – [bit.ly/APHIS](https://bit.ly/APHIS) in all caps, Web with a capital W, underscore Feb, with a capital F, then 2-8 underscore capital CC-- into your browser. The URL appears on every slide and please note that the letters are case sensitive. To submit questions, click the Q&A button located at the bottom of your screen as shown here. We will address as many questions as possible during today's session. However, if you submitted a question that was not answered, don't worry. Written responses will be posted -- along with a recording of this webinar -- on the Defend the Flock website. Be sure to follow us on Facebook and Twitter to find out when the responses and recording are available. We'll share those online destinations at the end of the webinar. Dr. Fox can you start us off by describing what highly pathogenic avian influenza is?

**Dr. Fox >>** Sure. There are four types of influenza or flu viruses, A, B, C and D. Each species has their own influenza viruses. For avian influenza viruses, gulls, shore birds and waterfowl such as ducks, geese, and swans are considered reservoirs or hosts for avian flu. Bird flu is the disease that's caused by these avian influenza viruses, they spread around aquatic birds worldwide and can infect other bird species. It's generally uncommon to infect other animal species and persons. And low pathogenic avian flu and high pathogenic avian influenza refer to the characteristic of the virus and the ability to cause disease and death in chickens in a laboratory setting. Most avian flu types cause little, or no signs of illness or domestic wild birds pose no threat to human health these subtypes are found every year in waterfowl. The sub type responsible for the outbreak that began in 2021 is highly pathogenic causing

significant illness and death in poultry so it is of heightened concern. Next, we'll briefly discuss the current status of the highly pathogenic avian influenza outbreak in the U.S.

As of February 26, 2023, APHIS has confirmed highly pathogenic avian influenza in 47 states. This affects 774 premises and over 58 million birds. These premises included 418 commercial flocks and 356 backyard or pet bird flocks. Next we'll go through some frequently asked questions about highly pathogenic avian influenza.

**Moderator** >> Thank you, Dr. Fox.

***Dr. Baldwin, what animals carry highly pathogenic avian influenza and how does it spread?***

**Dr. Baldwin** >> Great question, Susan. Dr. Fox touched on this when talking about what highly pathogenic avian influenza is, but primarily host species for HPAI is wild birds that's what we think of typically as waterfowl and shorebird species, things like our geese and ducks are the primary reservoir species for this virus that we're seeing right now. We're also seeing it in some other wild bird species that we hadn't seen in previous outbreaks. Our raptors and birds of prey, things like owls, hawks, and eagles. USDA is tracking the different species that have been infected with avian flu on their website, the website is called 2022-2023 detections of highly pathogenic avian influenza and it lists all the species and birds that have been affected in this outbreak. These infected birds are primarily shedding the virus in their droppings and in their respiratory droplets, in their saliva. So, their bodily discharges and feathers from infected birds.

So these birds are carrying a lot of virus and they're shedding a lot of viruses as they fly and as they move around. So people that come in contact with wild birds that may be affected or infected by this virus can also act as a vector for that virus even though people may not become infected or sick with the virus we can carry the virus just like we carry other germs on our body and on our shoes, on our clothing, or if we're using equipment, if there's equipment that comes in contact with sick birds that are affected by the virus that equipment can also carry the virus and potentially spread it to other birds, whether that be other wild birds or our domestic poultry as well.

**Moderator** >> Thank you Dr. Baldwin

***Dr. Fox, what are the signs and symptoms of HPAI that flock keepers should watch out for?***

**Dr. Fox** >> Well, whereas low pathogenic avian influenza in poultry shows no symptoms often the first appearance is sudden death of the birds more subtle signs may include diarrhea, lack of energy or decreased food or water consumption. You might notice some misshapen eggs or eggs with very soft shells. You might have some flu like symptoms including nasal discharge, coughing, sneezing or snicking as we call it. More obvious signs will be swelling of the head and eyelids, swelling of the combs, wattles or legs, and sometimes you might see purple discoloration of the wattles combs or legs. The birds may be very uncoordinated or may just sit in one place and not move, not even to get food or water. You might also see a very strange curling of the neck as in the lowest picture. That's called torticollis and is one of the signs that's almost pathognomonic for avian influenza or another disease that we look out for called Newcastle disease.

**Moderator** >> Thank you, Dr. Fox.

***Dr. Baldwin what can bird owners do to decrease the risk of HPAI infecting their flocks?***

**Dr. Baldwin** >> Great question, Susan. I think this is one of the most important things for all of the webinar participants to know is how can you keep your birds safe and how can you keep your birds

healthy. So, the most important thing, of course, with this virus being carried and shed and spread by wild birds is really keeping that separation between your domestic poultry and wild birds. So keeping those wild birds away from your food sources, your water sources, making sure that you have coverings to prevent them from getting access to your flock at home. And all of these tips, what's really important to remember is that this is really going to be site specific or premise specific. There's not really a one-size-fits-all for bio security. And that's the importance in the Defend the Flock you can walk through that program and get all those tools and tips and tricks on how to apply bio security practices to your premises, to your farm and your home, and your barn, to keep your flock safe. So some of that might be keeping your birds indoors during those periods of migration, when we're concerned that we're going to have more wild birds.

And keeping them confined a little bit more to reduce that risk of interaction with wild birds. Of course, keeping your feed enclosed and away from contamination, from wild birds, if those wild birds are shedding that virus again in their saliva, in their feces, if they have access to your feed bins and access to your water sources they can shed that virus into feed and water and easily transmit that virus to your domestic poultry flock. So really important to keep your feed spills cleaned up and keep your water sources covered to keep those wildlife and wild birds out of there. National Poultry Improvement Plan is another really important national program that there's a lot of diagnostic testing that happens and there's birds and flocks that are HPAI-free. There's birds and flocks that they are routinely doing testing for highly pathogenic avian influenza. So if you're buying birds make sure you're buying from NPIP participating flocks is going to be really important. Next slide.

And then of course we, as we already mentioned, we need to be very cognizant of all of the different ways that the virus could spread in and around a farm as well. So if we are using equipment, if we are using tools, making sure that you're using separate equipment that may not be contaminated from one area to another. So if you're handling manure with shovel and rakes you don't want to handle your feed with the same shovels and rakes and any tools you're using is clean and disinfected not shared between flocks or premises but really keep them site-specific and premises-specific. The other important thing is that as we walk around our farms, as we walk around our environments and our home areas, is making sure that you're not wearing those same shoes into where your flock is kept, whether that be in your yard or your barn or another confined space. But it's very easy for the virus to be tracked and carried on your shoes have a dedicated pair of shoes or boots or covers to put over your shoes so you're not tracking any virus into your flock area with potential contamination on your shoes. And as always a good practice is just washing your hands for any sort of germ prevention, just like it is for people, washing your hands and making sure that you're not carrying any virus or any sort of germs on your hands into your flock. Another really important thing is we'd encourage everybody to right now maintain a closed flock by not introducing new birds because new birds can be a source of infection. If you do get new birds, or if you do take your birds to a different area and commingle with others and then return home, it's really important to isolate any new birds coming on to your farm or coming into your flock, isolate those separately for up to 30 days before you introduce them to your flock. And that gives you enough time to make sure that those birds are not harboring any virus, that they're not sick, and hopefully they don't pose a potential risk for infection to your flock.

**Moderator** >> Thank you, Dr. Baldwin.

***Dr. Fox, are humans at risk of getting HPAI and are there food safety concerns that we should be aware of?***

**Dr. Fox** >> Well, fortunately, according to the CDC, the risk to humans from this particular virus is very low. You might have heard of human cases of avian influenza or bird flu in Asia. This is a different strain called H1N1 never found in the U.S. for some time. So far we're lucky this virus is not affecting humans and you can't get avian influenza by eating properly cooked eggs or poultry or handling poultry

products however there are some other diseases we need to be worried about such as salmonella handling raw poultry products. You want to make sure you handle those carefully, cook them properly and clean and disinfect the kitchen area where they're prepared to protect your family from other things we might be worried about, though, in this case not highly pathogenic avian influenza. So highly pathogenic avian influenza affects poultry, not people.

**Moderator** >> Thank you, Dr. Fox.

***And finally, Dr. Baldwin, a question that we know that so many people want to understand, as flock keepers, what can or should you do if you're concerned if your flock is infected?***

**Dr. Baldwin** >> Thank you, Susan, for that question. It's an important question. The next important next to practicing bio security if you suspect your flock is sick or has avian influenza, it's really important to report those to the state or to USDA. And we work together, all of the time. If you report it to one, the other is also going to be in touch. So it's important because highly pathogenic avian influenza is a foreign animal disease. And there are appropriate steps that we have to take in lab testing. So we dispatch what we call a foreign animal disease diagnostician, federally trained veterans that know how to collect the right samples for diagnostic testing for avian influenza they'll go out and collect the samples. It's important that's reported promptly so we can get the veterinarians out to your homes or farms and collect the samples and rule in or out avian influenza. There's a lot of other diseases that poultry get and some of it can look very similar to avian influenza. It's really important that we rule that out or rule that in depending on the different clinical science that we might be seeing. So by doing that, you can contact your veterinarian. If you have a veterinarian you're working with, you can contact that veterinarian and they will be in touch with us and make sure that we follow, like I said, those appropriate sampling protocols for avian influenza testing. You can contact your local cooperative extension office. Those folks know how to get in touch with us and walk through that same process, and then depending on which state you live in, you may have a board of animal health in your state or you may have a state veterinarian's office. There's a lot of different names and a lot of different things that they're called, but we all do essentially the same thing. We're responsible for animal health and disease control activities in our state. So in my state, in Colorado, I'm the state veterinarian at the Colorado Department of Agriculture. So, we're in the Department of Agriculture. But some may be a board of animal health. Just know in your state who is the most appropriate party to call. And then, of course, if you still aren't sure, you can always call the USDA number. The USDA number will route to the right state and make sure that we have the right people doing the follow-up in those states. That number is 866-536-7539. Again, that USDA number is 866-536-7539. Thanks, Susan.

**Moderator** >> Thank you Dr. Baldwin and thank you Dr. Fox, we really appreciate you sharing these insights. I know this is valuable information for everyone who owns or cares for birds. Now we want to hear from you who are participating in this session today. Again, to submit questions, click the Q&A button located at the bottom of your screen and remember, if we don't get to your question live today, we will be collecting all of the questions from today's session and posting answers -- along with a recording of this webinar -- on the Defend the Flock website at a later date.

Thank you for all the questions that have been coming in.

***We've been seeing a bunch of questions Dr. Fox about whether USDA has guidance for growers and backyard flock owners about what types of protective actions can be taken when there are other animals, could be swine, could be other livestock or even other birds, even songbirds on the premises, what can be done to protect against the spread?***

**Dr. Fox >>** Thanks for that. That's getting back to what we were talking about with biosecurity and protecting your animals from the viruses. Having other species should not be an issue, like swine. And we have seen that many bird species, in this particular outbreak, are not only carrying the virus but ill with the virus. One of the things we want to do is to exclude any other birds from our structures to the extent possible. So we really need to try to keep those songbirds, starlings, things like that, away from our flocks, away from our barns, certainly not nesting in the eaves, covering those areas with wire or some way to keep them out. What we want to do is keep out any wild birds that may have the opportunity to get in and spread this disease via their feces. So that's a really good question. That's the best thing we can do is to exclude any other birds from the premises. I know some backyard flock owners also have ducks. And ducks are one of the species that don't necessarily get sick from the highly pathogenic avian flu but they can spread it to others. They like to go out to the pond where you have wild ducks. When we've got this active outbreak going on it's really recommended that is not allowed. So as much as that might feel like it's restricting those animals and not -- a flock of duck and chickens you want to keep those ducks away from the other birds. Really, it's all about bio security and excluding birds from your flocks. Thank you.

**Moderator >>** Thank you, Dr. Fox.

***Dr. Baldwin we're seeing a lot of questions from people who are saying that usually this time of year is when they get their meat birds from a hatchery. Is it safe to bring those birds into the coop or house and some are asking should they get new birds at all?***

**Dr. Baldwin >>** Great question. This is one we're getting ahead of show and fair season as well. So I think one of the important things is, like I mentioned during that, how do we prevent this spread, is to really try to maintain a closed flock if you can. And that might be that you can introduce birds at some point in time, but after that isolation period. So one thing is going to be buying from the National Poultry Improvement Plan. NPIP participating flocks that are testing for avian influenza. So you know that flock has routine surveillance and hopefully the risk of them bringing avian influenza to your flock. And if you do acquire new birds bring them home is isolating the birds for up to a month and keeping them away from the rest of your flock before you introduce them. Again, the goal in that isolation period is to give you enough time to make sure those birds are not sick and those birds do not have avian influenza. And don't bring that into your flock. So, there are some ways to reduce the risk. But the most important thing, if you do bring birds in, is again NPIP flocks and isolating otherwise we do recommend maintaining closed flocks.

**Moderator >>** Thanks, Dr. Baldwin.

There's a follow-up question that I think might be worth exploring at this time.

***What qualifies as an outbreak and how do you know when it's okay to let your birds back out?***

**Dr. Baldwin >>** That is an excellent question, too, because we are in this ongoing outbreak situation. We're now a year into this with highly pathogenic avian influenza. And what we are seeing is that it does tend to increase during certain times of the year and then we see fewer cases in other times of the year. But the risk is always pretty present. We're seeing avian influenza really anywhere we see wild birds. We're not testing every wild bird. It's really important to assume, if you have a reservoir, a wild bird is in your area even if you have those species that we don't typically think of as reservoir species, it's important just to accept that there's probably avian influenza circulating. And one thing we do acknowledge it's really challenging for bird health to keep them indoors all the time. Especially those that are not used to being housed indoors all the time. It gets really challenging. This is something we've walked through with a lot of our zoo facilities and those that have specialty bird collections, is how do we maintain that balance of keeping the birds safe and healthy but also

maintaining their mental health and being able to exhibit their normal behaviors? So I think it's just really important to look at what you can do for your flock and it may not be that you maintain them inside the coop or inside a barn all the time but maybe you do but they're not for certain periods of the day under a covered run. So they're still not going to be exposed to those wild birds that may be shedding droppings over the area. But there is a balance that we have to reach because we're in this prolonged outbreak period. And it's really hard to tell whether the risk is greater or when the risk is less, because the wild birds really are everywhere. And we're seeing this in so many different wild bird species that we haven't seen before. So I hope that answers that question, Susan.

**Moderator** >> Thank you, Dr. Baldwin, we'll give you a break and direct the next question to Dr. Fox.

***Can you help us understand, Dr. Fox, why is this outbreak worse than in 2015?***

**Dr. Fox** >> Well, I wish I had the answer to that. That's the \$64 million question. I'd be ready to retire with all the money I'd make over that. We don't really know. What we do know is a couple of things. Is that in this case, most of a majority of the flocks being affected are being affected directly from wild birds. We have much less farm-to-farm spread this time than we did in 2015. So that's a good thing. That means that our biosecurity is working, but what we don't understand is why so many birds are carrying it such long distances and for such a long period of time. So we did know previous to us having this outbreak that Europe had it ongoing for several years and we were afraid it was going to hit us in the last several years. And so far, it's been a year. So, we don't know why this one is so much worse. But what we do know is some of our activities, meaning biosecurity are keeping it much better than it could be because we're getting from the wild birds we want to be careful not tracking that in as Dr. Baldwin has talked about. But at the same time we're doing a better job of not transmitting it between different flocks within our industry. So we hope that in the coming spring, maybe it decreases, unfortunately as mentioned spring is the time of year where it usually increases and over time we hope that the birds themselves have a higher resistance to it and don't transmit it as much. But so far that's all we can say.

**Moderator** >> Thank you, Dr. Fox.

Dr. Fox and Dr. Baldwin, I think I'll put this question to both of you and I'll let you jump in as you see fit. As you can imagine, we're getting a lot of questions about vaccines.

***Is there a vaccine being worked on? How come there isn't one? What birds would be, would it be safe for?***

So anything you can tell us about the status of vaccines that to protect our flocks from HPAI would be greatly appreciated.

**Moderator** >> Dr. Fox did you want to take that one first?

**Dr. Fox** >> Sure. I was about to say nationally we do have a group together that is looking at possibility of vaccination. Right now, there are several issues with vaccination that we're trying to work through. One of being that we don't have a licensed vaccine yet. They are being worked on. And just like your flu vaccines that you have to get every single year, every different strain requires a different vaccine. It's not like we could have stockpiled vaccine from 2015 had it ready to go for this outbreak. The vaccine has to be made as the strain shows itself. Not unlike the COVID vaccines and the avian influenza vaccines that you get. The other difference is we have to be able to tell the difference between vaccinated and unvaccinated that's a DVA strategy. Some vaccines that's very easy to do. Other vaccines it's more difficult to do. We need to look at a vaccine candidate where we can tell the difference between vaccinated and unvaccinated animals and we need to look at the expense of

vaccines whether it's worth it from a business point for the poultry industry to utilize them or get one that's used in backyard collections zoo collections but not used in commercial poultry industry based on trade and all sorts of other things. That's not the primary issue that we're having. The biggest one is what we all talked about. The virus itself is being spread more from wild birds coming in and their droppings getting tracked in than it is from bird to bird to bird. So, if we vaccinated some flocks, they would be protected from the wild bird but you're not going to have a protection between the flocks of vaccinated flock versus unvaccinated flock. That's not how it's transmitted. You have a drop of vaccination, you'd have to continuously have to vaccinate over and over for long lived birds like you egg layers and your turkeys that would become one of the situations where it's not possible to do it. You can't deal, give an injection to, say, 2 million birds in any period of time that would be reasonable rationale or doable. So we do have groups that are working on this and it is being discussed all the way up to the president's office. So, we are looking at it. But we want to make sure we do it properly. We want to make sure we do it so that we're helping out the industry and not hurting the industry and helping out backyard flock owners and zoo collections and things like that and not harming them. I hope that helps with some of the answers.

**Moderator** >> Yes, Dr. Fox. Dr. Baldwin did you want to add to that.

**Dr. Baldwin** >> I think Dr. Fox hit all the points.

**Moderator** >> All right. Thank you, Dr. Fox.

We're seeing a lot of questions about how HPAI actually spread and Dr. Fox this might be another question for you.

***How can it be transmitted through the air? You know, how does it actually -- what's the mechanism from getting from wild birds to poultry, and then how long does the HPAI virus last in wild bird droppings and feces and saliva?***

So there's a lot of parts to that. But I think you understand the thrust of it, Dr. Fox.

**Dr. Fox** >> All those are really good questions, and it goes back to why we recommend all the biosecurity measures we do. So, first of all, it is spread based on feces and secretions. So that would also include saliva and ocular secretions and things like that. But obviously the most common way is going to be through fecal contamination. So assuming that you have a Canadian goose and it drops its feces there, that feces then has to be introduced to your flock. So either by you tracking it into your barns, or other birds tracking it in. So then just like any other avian or any other flu virus that can be transmitted to that one chicken and it coughs, sneezes, or defecates and it's transferred to the flock. We're talking about secretions and talking about the fecal route being most common.

The good news about all avian influenza viruses is that they're pretty easy to kill. So a disinfectant working on things like salmonella or COVID or whatever is going to kill influenza. It's not difficult to kill. Any disinfection washing with a detergent will do it. We have specialty things out there like Vircon, or a very mild bleach solution will work. It's very simple to kill. Between birds, once they become infected, they defecate an amazing amount of virus in a very short period of time which is why it will go from one bird to an entire barn full of turkeys in 24 to 48 hours that's the amount of virus they're putting out that's one of the reasons we want to depopulate those flocks as fast as possible because they're little virus machines.

So once that virus hits the ground though, we like the tincture of time. So drying it out, very high heat, ultraviolet light, all those things out doors kills it very quickly in a moist environment it can last a long time. So we look at disinfecting our boots, disinfecting our tools things like that with something a little

bit stronger especially if it's on the moist fecal material. But it's pretty easy to kill and the environment will handle it. And usually less than 14 days in a manure pile that is drying. We talk about the period of time for which birds may or may not transmit the virus. Usually the birds die, but if they live, they can transmit the virus, which is why some birds it may not show that they're ill also would need to be depopulated so they don't make all the other birds in our flock ill. I hope I covered most of that.

**Moderator >>** Yes, Dr. Fox.

We've been talking throughout this session about biosecurity. And I think this might be a good time to address some of the questions about best practices and how to implement biosecurity.

***And there's a question that's come in asking for recommendations for the proper ways to sterilize equipment and materials, tools, coming in from outside sources.***

Dr. Baldwin, would you mind answering that for us?

**Dr. Baldwin >>** Yes, absolutely, Susan.

So, there's really a number of ways that you can make sure that your equipment is clean. But a simple bleach solution is probably going to be the easiest. There's a lot of different solutions that can be applied that are effective against avian influenza, and Dr. Fox might know and Susan you might know if they're listed on the Defend the Flock website. I don't recall if the list of the upper grade disinfectants is listed but it's important to use something against avian influenza, something like a bleach solution and like Dr. Fox mentioned everything having enough time to dry out and no moist surface for the virus to live on is going to be appropriate.

**Moderator >>** *How about disinfecting vehicles during cold weather?*

We're here on the East Coast, first snowstorm. I'm sure this is top of mind for a lot of us on this side of the country.

**Dr. Baldwin >>** Yes, it certainly is. And I can tackle a little bit of that see if Dr. Fox has anything to add. It's been a challenge out in Colorado since we've been hit by avian influenza. A lot of commercial we had five-degree weather to 40 below. And CND cleaning and disinfection had to happen throughout all phases of that regardless of what weather we were dealing with. So those larger facilities we ended up having to come up with different solutions with uses-on- using different agents that would try to try to keep the chemicals from freezing. Smarter facilities, just trying to keep something inside your barn or even in the house a pump sprayer with bleach solution to spray on tires around the undercarriage of vehicles would be appropriate. Keeping something in a warmer environment, taking it out as needed. And then putting it back where it's warm and not freezing is going to be ideal. And these winter conditions, it does get really challenging for C and D to happen. The very large commercial scale operations there's a lot of other operations that they can use to ensure that they have disinfectant that's working throughout all seasons. I don't know if Dr. Fox, you had anything to add on to that.

**Dr. Fox >>** Not really. But the only thing I would mention when we're using any disinfectant make sure we clean it first, because those agents including bleach are inactivated by and it's important that we do both.

**Moderator >>** Thank you Dr. Fox

The next question we'll probably send back your way Dr. Fox



***Any steps or protections that humans need to take if they come in contact or have birds in their flock that are infected with HPAI?***

**Dr. Fox >>** No, that's a good question. And certainly, it's a concern. We do want to make sure that we do protect ourselves from anything. Right now, we know that this virus is not affecting humans so far but viruses can mutate. We don't know if there's other viruses out there or what the animals actually have up to the point that we have some laboratory diagnostics back. So it's always better when you have sick or dead birds to certainly use gloves, wash your hands, making sure you're disinfecting your boots and things like that. If you're taking care of a flock that you know has highly pathogenic avian influenza, it's more of a situation of you moving it in between birds and maybe the different facilities on your farm. By accident than it is a direct risk to you or your family.

So as I mentioned before, the virus that we're dealing with is different from the H1N1 that people have recently been hearing of recent cases over in Asia and we have much different cultural practices over here as well.

**Moderator >>** Thank you, Dr. Fox.

We're seeing inquiries related to incubation eggs.

***Can HPAI be transferred or transmitted from incubated eggs?***

**Dr. Fox >>** In general, we say no. Basically, the process of incubation is a heat treatment. And it will kill any virus that's on the outside of the egg. And certainly if you've got virus on the inside of the egg, well, then that egg is not going to hatch. So incubation itself will take care of the virus on the outside of the egg. If you have a live chick on the other side of the egg you know you didn't have virus inside the egg, you're talking about balut or partially incubated eggs and eating them, that's different. You've got to make sure that you've got to proper amount of heat to make sure that the virus isn't activated inside the egg. So virus in the interior of an egg that came from an animal that was avian influenza infected, it's very small percentage of eggs will actually have the virus inside of them, but it's possible. That's what we talk about incubation. We don't worry about eggs once they've gone to an incubator.

**Moderator >>** Thank you, Dr. Fox.

I think we have time for probably one more question, maybe two. We'll see how it goes. But we're getting variations on the question of:

***Can birds recover from HPAI?***

Dr. Fox we'll give you the first swipe at this one.

**Dr. Fox >>** Well, certainly the answer is yes. But so far we've seen very few so low pathogenic avian influenza birds will recover most often. Some mortality. But most of the time these birds are all dying. Unfortunately, when we have had mixed flocks and backyard flocks and they had a custom of chicken that were fixed too, we want to save these birds over here, they're not sick. Three or four days later those birds are sick too. So, it's possible. It's really uncommon for birds to survive domestic birds, poultry to survive this virus right now unfortunately. I don't know if Dr. Baldwin has seen anything else.

**Dr. Baldwin >>** Thanks Dr. Fox to add on that we haven't seen anything differently. Susan I've scrolled through the questions as well. Just to give an overall picture, it does have a mortality rate more than 90%. We really are seeing effective birds dying at a very high rate. There is no treatment. There is no vaccination. So, this is a viral disease. It's not something that can be treated with antibiotics, for

example, like bacterial infections can. So while we can see some flocks that may have been affected where all the birds don't die all at one time, we are still seeing really high mortality rates in these flocks with domestic poultry overall.

**Moderator >>** Thank you, Dr. Baldwin.

Dr. Baldwin, actually, thank you Dr. Fox as well.

I think I'd like to end on one last question, thinking about our smaller flock owners, I know we talked about reporting sick birds, but if your veterinarian –

***Do you need to use a veterinarian who specializes in poultry, or in avian health? How can our webinar participants find specialists who might help figure out what's going on here?***

Perhaps Dr. Baldwin we'll let you start with that.

**Dr. Baldwin >>** Absolutely. And I know that this has been a challenge for our bird owners and backyard owners, there's not a lot of veterinarians out there. But they're some beginning to see more and more backyard birds. So the demand is increasing, reach out to your local veterinarians and ask the question first. If you feel like your flock is sick and you don't have a veterinarian, you can contact us directly; it doesn't have to go through a veterinarian. You can contact the state veterinarian in your state or contact that USDA number I mentioned a few slides back. You can just contact the state or the USDA directly if your flock is sick, and they'll walk through the process of going through the diagnostic testing with you. So that might look like, if we have a private practice veterinarian it might look like we coordinate with your veterinarian on collecting those samples. If you don't we might send one of our veterinarians out to collect those samples or we might have you bring that sick bird or if you have a dead bird, bring it to the diagnostic laboratory. There's a lot of different ways to facilitate that, and it doesn't have to go through a private practicing veterinarian first. But I do encourage everybody just for routine bird health it's important to have a good relationship with a private practicing veterinarian, because they're also really helpful in making sure we have the appropriate vaccinations, the appropriate treatments or internal and external parasites that birds may get to try and keep our flocks healthy from things other than high path avian influenza. So if you don't already have one, it's going to be important for you to hopefully try find one locally that can help you through that. Thanks, Susan.

**Moderator >>** Thank you, Dr. Baldwin.

And thank you, Dr. Fox, for sharing your knowledge, expertise and compassion.

Now we will switch over to share with everyone resources that are available through the Defend the Flock campaign that contain information from growers, veterinarians, state agencies, scientists, and industry professionals. In the next slides, we'll review resources that flock keepers can use as well as tools to educate others about best practices to prevent the spread of infectious diseases. APHIS Veterinary Services has developed a library of checklists that provide practical tips and recommendations.

I think Dr. Baldwin was talking about disinfecting solutions and it's definitely detailed in the checklist on cleaning and disinfecting poultry enclosures in the test with regard to vehicle's. We encourage you to visit the and download these materials. All the checklists are available in multiple languages, including Spanish, Chinese, Vietnamese, and Tagalog and this year, we've added checklists in Hmong and Arabic.

On the website you'll find lots of other free tools -- including videos, recordings of prior webinars, info cards, newsletters, posters, and other resources. Tomorrow APHIS will officially launch their

“Biosecurity Workbook,” a planning tool to aid poultry owners create a biosecurity plan to help protect and care for their birds throughout the year. I think we can all agree that our youth are the future of our nation’s poultry farming and industry. We encourage and prepare all poultry owners – including future and aspiring growers – to be diligent about biosecurity and become a Flock Defender.

So all of us here on our team are very pleased to announce that this week APHIS is launching the new Flock Defender Youth Program. The program includes an interactive game and fun activities for all ages such as word searches, crossword puzzles, and coloring pages. There’s also a Biosecurity Education Kit for educators and youth group leaders. The complete Flock Defender kit is available on the APHIS website. APHIS has also created digital content to help promote biosecurity.

Infographics covering many best practices are available in English and Spanish. We hope you will share these with colleagues and fellow poultry keepers by email, text, or on social media to make sure everyone is using biosecurity every day, every time -- no matter how many birds are in the flock.

And finally -- well, we hope you will Follow Defend the Flock on Facebook. You'll be able to be notified when this presentation and the Q&A are available and lots more useful information. This presentation, along with answers to the questions we were unable to get to today, will be available for download from the Defend the Flock website shortly along with this presentation.

Finally, before we sign off, on behalf of APHIS and all of the flock keepers here today, thank you, Dr. Fox and Dr. Baldwin for sharing your valuable insights and knowledge with us. We appreciate all that you both are doing to keep our birds safe. And thanks to all of you for joining us on this webinar.

Let’s keep our flocks healthy Together.

**Dr. Baldwin** >> Thanks so much, Susan.

**Dr. Fox** >> Thank you.