

For the Health of It: Guiding Conversations on Community Health

S1:E1: What's Bird Flu? Insights with Dr. Matthew Nonnenmann

Tristen Menichetti 0:00

Welcome to for the health of it guiding conversations on community health.

Dr. Ali S. Khan 0:06

I'm Dr Ali Khan, Dean of the College of Public Health at the University of Nebraska Medical Center and a former assistant surgeon general.

Tristen Menichetti 0:13

And I'm Tristen Menichetti, Communications Specialist at the college. Each episode, we break down complex issues, highlight our community's work and discuss the steps we can take to improve health outcomes, whether you're connected to our college or just passionate about health, this podcast is for you.

All right, today on for the health of it, we are so excited to welcome Dr. Matthew Nonnenmann, a professor in the Department of Environmental, Agricultural and Occupational health here at the college. With 25 years of experience in the agricultural and healthcare sectors, Dr Nonnenmann has dedicated his career to understanding how environmental factors impact both public health and safety. One major area where we're seeing health and the environment kind of come together is infectious disease, especially those that originate in animals and have the potential to spread to humans. That's exactly what we're diving into today. We are here to discuss bird flu. Avian influenza has been making headlines, and with cases seemingly popping up left and right, there are growing concerns about what this might mean for public health. Our guest is here to help us break it all down. Welcome to the podcast!

Dr. Matthew Nonnenmann 1:25

Thanks! It's great to talk to you real casually. I like it.

Dr. Ali S. Khan 1:28

So, bird flu has been around at least since 1996-1997 and yet, every day when I open the newspaper, there it is. So, what's going on? Tell us a little bit more about what's bird flu?

Dr. Matthew Nonnenmann 1:38

Sure. So, the latest lineage, or, you know, a virus that's circulating is a concern because, traditionally, bird flu, it hasn't infected cattle, and this currently circulating virus infected cattle, and so that's a concern. And, you know, taking a couple steps back thinking about influenza often, you know, influenza can be a zoonotic infection, so that means it transmits from animals to people and people to animals, since this particular virus hadn't infected cattle before, and there are a lot of cattle in the U.S. and across the world, you know, it's a concern, because there's just more opportunity for infection and potential spillover to humans or other animals.

Dr. Ali S. Khan 2:19

So, remind me, we were having this conversation earlier. So, influenza, generally, is a virus of animals, and specifically of waterfowl. And so, we have certain types of influenza that infect humans, and we're always at risk of, I guess, a new one, which is why we're concerned about this H5 N1?

Dr. Matthew Nonnenmann 2:36

Right, right. Yeah. And I think that that's the initial concern, and it's a little shocking when we start to see it. So, I think the concern is now, well, is it infecting people, and then is it causing clinical disease in people, making them sick and and, you know, we're still answering that question. I think you know, initial observations are, that it's not causing severe disease, and among a lot of people, there are a few cases like there's been at least one fatality, I believe, and then more than that, actually. But when you, again, compare it to the influenza in general across the U.S., the number of severe cases is much lower than seasonal influenza that we're experiencing.

Tristen Menichetti 3:18

If the numbers are lower than the seasonal influenza, then why is this back in the spotlight?

Dr. Matthew Nonnenmann 3:23

It's a great question. I think again, that initial concern of wow, cattle are being infected by this— we didn't expect this, this is new, and so when a new species is infected, you have other opportunities for transmission to other species, like humans or domestic cats, or like farm cats, that's a concern, and or other livestock. And so again, limiting transmission of influenza, I think, is always a good thing, you know, from a public health standpoint, so we don't get that migration of the of the virus. They call it antigenic shift, or antigenic drift, where the viruses change over time based on those transmission events. And so, we don't want that.

Dr. Ali S. Khan 4:04

Yeah, 1918 grand influenza pandemic is enough for us.

Dr. Matthew Nonnenmann 4:10

Absolutely. We don't need more of those and so of course, initially, when, when this is discovered, it's like, oh my gosh. We haven't seen this before. Is this a bigger problem that we're unaware of? And thankfully, you know at least initial indications are that it's not a huge public health problem as of yet, where it's making people sick. But, obviously we want to limit transmission of influenza, so we're looking for ways to do that.

Dr. Ali S. Khan 4:34

For the most part with this influenza infection age five and one, people tend to more likely get, like, eye inflammation or something?

Dr. Matthew Nonnenmann 4:42

Right, so that's a great point in, you know, looking through the literature, there's certain types of cells in the eye that have been, again, I think this was just one or two papers that I

found where H5N1 infects some of those cells. And so, there's questions about, when someone is exposed, is it directly to the eye and that results in that sort of pink eye? Or is it, you know, systemic exposure, and then, of course, the virus somehow settles in the eye and infects those cells. So I think there's a lot of, like, mechanistic style questions for that. But I think in the short term, great advice is like, well, if you're working with animals, keep manure out of your face, you know, I mean, it's like, not much has changed there, but just trying to keep the splashing out of your face, and you know, thinking about ways to reduce transmissions, or if you're touching a surface and then you touch your eye, or you're eating food with your hands that have some sort of contamination on them, whether it's manure or other fluids from just working with animals.

Tristen Menichetti 5:37

Do you think that if this continues to get worse, it's going to severely impact our communities. What does the risk look like?

Dr. Matthew Nonnenmann 5:44

So, it's a good question, and I think a lot of people are concerned about that question. I mean, for me, when I'm thinking about rural environments, you know, obviously agriculture is a large employer and a huge part of our rural economy, and so any sort of disruption to the agricultural you know, livelihood and economy is incredibly disruptive. And we all know, if you work in agriculture, the profit margins are not robust. So, producers have a lot of capital investment, and the return on that investment is challenging at times, and so anything that disrupts that supply demand, whether it's supply of feed or whether it's the onset of a new organism that's infecting animals. It's concerning.

The approach for poultry is a little different than for dairy cows and so on the poultry side of things, if a flock is infected, the entire flock is euthanized in a humane way. You know, there are, there are plans to do this. And of course, as an agricultural producer, can you imagine, you work, you know, every single day to maintain the health and feed all of these animals, and then you have to kill them all. So, I mean that that's tragic in so many ways. And when that happens repeatedly, over and over again, it impacts that supply of food, you know, whether it's meat or eggs, to the market, and then, of course, when supply is down, prices go up.

Dr. Ali S. Khan 7:14

So, the college plays a great role, both here in the U.S. and globally, around these emerging infectious diseases. So, tell us, what are we currently doing for H5N1?

Dr. Matthew Nonnenmann 7:26

Great question, we have a CDC funded center here that's funded by the National Institute for Occupational Safety and Health, and that's called CS-CASH or Central States Center for Agricultural Safety and Health, long acronyms there, but we have a study that just recently funded within that Ag Center.

And the goal of that study— it's an outreach project. So, we're trying to share information with agricultural producers and people who live in agricultural environments. You know, current information about H5N1, what can be done to reduce their risk of exposure to H5N1 and reduce their risk of disease.

Tristen Menichetti 8:06

Are you seeing any challenges coming with informing the public about bird flu?

Dr. Matthew Nonnenmann 8:11

Yeah. I mean, I think the challenge is that, you know, initially the message was somewhat grim from the CDC about the mortality rates associated with avian influenza. And so, there were a lot of starts and stops. I'm like, well, what should our message be? And as we've kind of learned more, you know, it seems like we're not observing— I don't know what the right adjective is for describing high or low versus like level of disease, but we're not seeing a lot of disease.

And so there's questions about, well, what is, quote, an appropriate response when this is what we're seeing among people working in agriculture? And I mean, I kind of anecdotally say, well, if people were getting really sick in agriculture and mortalities were occurring, we would likely know about it, given the flu surveillance systems that we have. And those, as far as I know, haven't shown up much on the flu surveillance side. And so then the question is, okay, well, is there disease and it's debilitating and we're not seeing that, or is there disease and it's not debilitating and we're seeing that, and is there transmission among families?

These questions all come up and it's hard to know. Well, what do you tell people to do? And yeah, from my perspective as a scientist, as a human exposure scientist, you do what you've done in the past. So if you observe illness among animals, or if you observe illness among people you're living with, you do the standard things, like standard precautions of washing your hands, distancing yourself, and ramping up course biosecurity procedures on the farm, which are very similar to what we do at home. You know, like, if someone's sick, you wipe down countertops, you clean surfaces more and try to reduce potential exposure to that organism.

Dr. Ali S. Khan 9:53

For listeners at home, are there some specific things that you would suggest for them?

Dr. Matthew Nonnenmann 10:05

Yeah, don't drink raw milk or do not eat undercooked eggs. Think those are two great recommendations. You know, pasteurization exists for food safety, and pasteurization kills, inactivates the virus in the milk, so milk is completely healthy and it's still okay to consume, with the exception of raw milk, you know, milk that hasn't been pasteurized, I think that still remains, you know, a public health challenge.

And then, of course, the primary means that we have in public health, one that we're really proud of, which is incredibly effective, is vaccination, right? And so, the seasonal flu vaccine is really important to get, especially for people 50 and older. And the seasonal flu vaccine is not designed specifically for this H5N1 virus. But, of course, the things we've talked about previously, this antigenic drift and antigenic shift and those sorts of things that happen that help viruses change over time, we want to, we want to avoid, like a co-infection style occurrence. So, if someone has H5N1 and they also get circulating seasonal flu virus, we really want to avoid that, not just people, animals, too.

Dr. Ali S. Khan 11:10

So, we don't want the viruses to mix and match.

Dr. Matthew Nonnenmann 11:12

Exactly. We don't. We don't want that. And that's going to be our messaging, I think, for outreach for our agricultural workers and communities, is, you know, seasonal flu vaccination, and, of course, basic infection control practices, and if they feel the need to wear personal protective equipment, have some of that available. So, if people want to use it, it's there. So, get your seasonal flu vaccine, you know, don't drink raw milk, cook your eggs, and enjoy life.

Tristen Menichetti 11:41

Is there anything else that you would suggest for people in the agricultural industry, something specific they should do to protect themselves?

Dr. Matthew Nonnenmann 11:47

So, I think you know this is a really hard to do in agriculture, but often these viruses circulate through wild bird populations or wildlife populations, and so I think pest control on your farm is really important, and of course, limiting the interaction with wild birds. I do want to say often, backyard flocks are really common in poultry. So, people having their small group of laying hens for their own eggs. And I think also it applies there, controlling, you know, the interaction of your animals with wildlife, and controlling the access of wildlife to your little clutch of birds, so that, of course, you don't introduce H5N1 into your own little flock.

Tristen Menichetti 12:23

All right, so that is all the questions we have for you today. Thank you so much for coming on, Matt. We really appreciate your perspective on bird flu, and we'd love to have you on again!

Dr. Matthew Nonnenmann 12:33

Oh, of course, yeah, what you know, I really enjoy having conversations about public health challenges, and we're gonna keep having these fun conversations.

Dr. Ali S. Khan 12:41

Thanks for joining us on For the Health Of It. We hope today's conversation inspires action towards better public health.

Tristen Menichetti 12:48

Remember to stay connected with us and to support our work by visiting our website and following us on social media.

Dr. Ali S. Khan 12:55

Together, we can build a healthier future. See you next time you.