Episode Title: Zoonotic Diseases: Tips for Healthy Animal Handling

Summary: Carrie Klumb is an infectious disease epidemiologist from the Minnesota Department of Health. On today's episode, she explains zoonotic diseases and identifies how to prevent infections from handling animals. Carrie describes how animals naturally carry microorganisms that don't make animals sick but *can* make people sick. She answers common questions about handwashing and encourages practices to foster safe relationships between people and farm animals.

Expert: Carrie Klumb

Episode Quote:

"We can't just look at an animal and know whether or not it has a germ that could make us sick. We really want to go in with the idea that all animals could have germs that could make us sick, and make choices accordingly with that sort of frame of mind."

– Carrie Klumb, Minnesota Department of Health

Transcript

00:15 A. Proctor

Welcome to the FarmSafe Podcast brought to you by the Great Plains Center for Agricultural Health. In the blink of an eye, an injury can change your life and your farm forever. During each episode, we share first-hand stories and real-life tips for making safer and healthier decisions while on the farm.

Today, we continue talking about how people can better work with animals and keep themselves safe. In this episode, we spoke with infectious disease epidemiologist, Carrie Klumb about zoonotic diseases, agritourism and hand washing to prevent the spread of illness between animals and people. Welcome, Carrie.

00:56 C. Klumb

Hi, my name is Carrie Klumb. I'm an infectious disease epidemiologist at the Minnesota Department of Health. I work in the zoonotic diseases unit, and I have a couple areas of focus in the work that I do. One is coordinating our animal rabies surveillance system for the state. And the other focus is zoonotic enteric diseases, which are often diseases that people think are foodborne. So, like E coli or Campylobacter salmonella, looking at those diseases in agricultural workers and their families and then people who visit agricultural venues and agritourism venues.

01:32 A. Proctor

Carrie mentioned that zoonotic disease can develop as a foodborne pathogen. Other ways that zoonotic diseases can enter the body are through direct and indirect contact with animals. This includes coming into contact with the blood, urine, or feces of an animal, petting an animal, or getting scratched by one. Indirect exposure can occur through contact with an animal's habitat, including chicken coops, barns, and the animal's food and water dish. It can also be vector-borne, like getting bit by a tick or mosquito, or waterborne, like drinking or coming into contact with contaminated water.

Now, let's find out what a zoonotic disease is. Would you mind explaining what a zoonotic disease is?

02:13 C. Klumb

Yes. A zoonotic disease is simply a disease that can be shared between animals and people. Sometimes, we can make animals sick, and sometimes animals can make us sick. It is a two-way street where we can share those germs, or pathogens, that can make each other sick. It's more common to see the transmission go from an animal to a person. And some of those things that we think about are things I mentioned or my areas of interest like rabies and also E coli or salmonella, campylobacter. But then we can also sometimes make pigs sick with influenza, for example. That may be a nice example of how humans can sometimes transmit illnesses to animals.

02:55 A. Proctor

What are some symptoms of an illness that's a result of a zoonotic disease?

03:00 C. Klumb

For the diseases that we think about most commonly when we're interacting with farm animals, those are all going to be diseases that upset our digestive system or GI tract. The most common symptoms are vomiting and diarrhea. Sometimes people have really bad stomach cramps, sometimes people will get a fever, and sometimes with E coli bacteria, we can have people end up with bloody diarrhea as well.

03:24 A. Proctor

What should you do if you suspect you have a zoonotic disease?

03:28 C. Klumb

Anytime you get sick, you should go see your doctor or healthcare provider. If you're having a GI illness, so a gastrointestinal illness or you're having diarrhea or vomiting, it's a good idea to go see your healthcare provider. They can give you a stool kit, which I know isn't always a fun thing to think about, but collecting a stool kit and they can test your stool to see what germs are in it and what germs might have caused your illness.

Going to your healthcare provider is always a good thing to do. But then at home, really most of these infections that we get are self-limited, which means our bodies will get better on their own without any medicine. It just takes some time for our bodies to kill that bacteria or virus and get it out of our system. Most of the time, people don't need any medicines, don't need antibiotics unless they get really sick. The really important thing at home is to make sure you stay hydrated. And that you're drinking a lot of fluids and resting so that your body can kill those germs and move them out, give your body a chance to fight. Fight the bugs off.

04:28 A. Proctor

How serious can zoonotic diseases be?

04:30 C. Klumb

Sometimes zoonotic diseases can be very serious. The vast majority of people will get these infections and get better in about a week, usually, is about how long it takes to feel better. There are certain illnesses that are more likely to make people more sick. Salmonella, in a small percentage of people, can actually get out of your digestive system and into your bloodstream and can make people really sick. So, if that happens, then you definitely need to go to the hospital and be given antibiotics to treat the bacteria that ended up in your blood.

The other pathogen or germ that can sometimes make people really sick is E coli. Everyone's probably heard of E coli 157H7 at this point. Oftentimes we think about it in undercooked hamburgers, so making sure you cook your hamburger all the way. That germ is naturally found in the cow's digestive system and it doesn't make them sick. E coli 157H7 is just something cattle naturally have, and unfortunately, that can make us really sick because it is a type of E coli called a Shiga Toxin producing E coli. There are many different types of Shiga Toxin producing E coli or S Techs-- you might hear that term, and what they have is they have a gene that can make two different types of Shiga Toxins. The toxin is what can make people really sick and what causes the bloody diarrhea.

In a small percentage of cases, we have people develop a complication called hemolytic uremic syndrome or HUS, and that is more likely to happen in kids under the age of five and about 5% of those cases are fatal. So that Shiga toxin, is really nasty, and it breaks apart your red blood cells, which is how you get the bloody diarrhea. It can also shut your kidney function down. People often need to have blood transfusions and kidney dialysis and sometimes kidney transplants as a result of that HUS complication. Although it's rare and it doesn't happen all the time, those are the potentially really serious outcomes of these diseases and why we care so much about trying to prevent people from getting them in the first place.

06:42 A. Proctor

It sounds like there can be a pretty wide range of symptoms.

06:45 C. Klumb

Yes, you can have very, very mild illness all. The way to really serious illness where you're in the hospital.

06:51 A. Proctor

Are there specific species of animals that may pose a greater health threat than others?

06:57 C. Klumb

There are certain species of animals that will commonly see at county fairs or operating farms or petting zoos that are more likely to have these germs naturally in their system. Those animals are goats and cattle and poultry; those are kind of the main ones. Sheep and pigs can also have some of these germs. They don't seem to cause as many illnesses as goats, cattle and poultry do.

Cattle and goats both can have E coli 157 and other E coli S Techs – the ones that can make those shiga toxins. They can also have salmonella and campylobacter and then cattle are also a reservoir or like a carrier of a parasitic infection called cryptosporidium. Those are higher risk animals. They're also the really popular animals that you're going to see at the County Fair in these petting zoos. And with poultry in particular, they naturally have salmonella and campylobacter.

And so, I think one of the key points about all of this is that for all of these animals that have these germs, these are bacteria or parasites that don't actually make the animals sick. They're what we call commensal to that animal. It's something they naturally have in their GI tract, it doesn't cause them illness, but it can cause us illness. Understanding that, that it's nothing about how the animals being raised or cared for, you can have a totally healthy appearing animal that has these germs in their manure and can make you sick even if the animal doesn't look sick. That's because these bacteria and parasites aren't making animals sick, it's just something that they naturally have occurring in their body. We can't just look at an animal and know whether or not it has a germ that could make us sick. We really want to go in with the idea that all animals could have germs that could make us sick, and make choices accordingly with that sort of frame of mind.

Some of the lower risk animals are horses and rabbits, they are just less likely to have the germs that can be passed on to us that would make us sick. And if people are going to interact with cattle, calves in particular, and baby poultry also in particular, tend to have more of those germs in their bodies than adults, and are more likely to, potentially pass those germs on to people.

09:17 A. Proctor

Is there a way to test animals to see if they're a carrier of a zoonotic disease?

09:22 C. Klumb

That's a really good question that we get from operators quite a bit. Like can we just test the herd of animals and if they're negative, then we know that we're good to go, right? And I wish it was that simple. Unfortunately testing animals isn't a good control measure, because if we get a negative, it doesn't tell us a whole lot. Since these are commensal organisms, with these animals, they're not causing disease or illness-- that means that they are intermittently shed in the animals' feces. Sometimes they might be in the manure one day and then not in the next. That "intermittent" means it's not always going to show up, but it might and it might not. If we take a sample and we test it on day one and it's negative, we could take a sample on day two and test them, and it could come back positive. A positive result helps us if we're doing an investigation into illnesses and trying to figure out if the animals had the same germ that the people have that are sick, but a negative doesn't help us too much because it's just a negative at that one point in time.

10:27 A. Proctor

What should someone be aware of before they visit an agricultural setting?

10:32 C. Klumb

Things to be aware of before you go is that general concept, right, like there's an inherent risk of interacting with farm animals because they have germs that are naturally part of their bodies that don't make them sick but can make you sick. And we can't tell which animals have those germs by looking at them. Going in with the assumption that any of the animals you interact with could have germs that can make you sick, if you start at that point, then there are things to remember about the behaviors you do while you're with the animals. One is you don't want to eat or drink anything while you're in the animal area or touching their environment or the animals themselves, because the way that you actually get sick from these germs is by getting the germs in your mouth, so, you have to swallow

them. And so, if you are touching the animal or touching its pen railing, and then you're touching your food and putting the food into your mouth, that's a good way to get those germs into your body and then you could get sick.

Also, thinking about no hand to mouth activity. We touch our face, you know, I forgot the number of times per minute, without even realizing it, but trying to be really aware of am I bringing my hands to my mouth. Am I touching my face and my nose, my eyes while I'm in with the animals? Really try not to do that. You wouldn't want to be smoking or putting chewing tobacco in while you're interacting with the animals. And then for little kids, it's really trying to think about, do they have a pacifier, do they have a bottle? Do you have snacks on their stroller tray that could be contaminated? There are some studies with outbreaks showing that the bedding and the dust from that bedding in the in a barn gets into the air and the germs can actually be in the air and then settle on top of your food and surfaces through the motion of the animals and the people moving through that building, and so you end up with a germ coating on your food and other surfaces.

So really thinking about those things, keep your hands out of your mouth. No food or drink while you're in with the animals, and then the most important thing at the end is to make sure you wash your hands when you're all done. And that's even if you didn't touch an animal. Sometimes people forget, being in that environment, even if you didn't actually touch the animals, could be enough to contaminate your hands. We want everybody that goes through and looks at the animals, touches the animals, is in the animal area at all-- we want them to wash their hands as soon as they're done. You can use hand sanitizer until you can get to running water and soap, but hand sanitizer is not going to be a replacement because hand sanitizer doesn't work against all of these germs. For example, Cryptosporidium is a parasite and it has a hard outer shell that protects it from the alcohol in hand sanitizer. You wouldn't be able to kill that parasite just using the sanitizer. Using the soap and water, you're physically removing the germs from your skin, and then through the drying with the paper towel, removes even more of those germs. Another virus that isn't killed by hand sanitizer, which doesn't come from animals, but is spread person to person is norovirus. It's just another thing to be aware of that sanitizer is great as like a Band-Aid or a stop gap until you can get to running soap and water.

13:38 A. Proctor

What is the proper procedure for hand washing?

13:41 C. Klumb

I think everybody probably knows that you should be washing your hands for 20 seconds. The first thing would be getting your hands wet, then applying some soap and then lathering for 20 seconds. We often tell little kids to sing happy birthday twice. That's usually about 20 seconds long. That's really where you're scrubbing, and you're rubbing your hands back and forth, and you are trying to like physically scrub those germs off. It's a little bit hard over a podcast to show, but you want to make sure that you're intertwining your fingers back and forth so you're getting the sides of your fingers and you can stick the tips of your fingers from one hand into the palm of your other hand and turn them back and forth in a circle. Most people forget about their thumbs. So really thinking about scrubbing your thumbs. And once you've done all of that for 20 seconds, then it's really rinsing that soap and those germs off of your hands, then drying your hands and trying not to get them dirty again after you've just cleaned them. So, ideally the water would be automatic and hands free. If it's not, using a paper towel to turn the knob off so that you don't touch that knob again now that you've just finished cleaning your hands.

14:49 A. Proctor

How can someone, let's say the parent, encourage their children to practice good hand hygiene?

14:57 C. Klumb

Trying to make it fun, right, like singing the ABC's or Happy Birthday where it's a little bit of a game. Now we're done with the animals, we're going to go wash our hands and let's sing together. And just reminding them that this is just, you know, something we do when we're with animals. It's really great to spend time with animals. It's so important to have that human-animal connection. It's just part of what we do when we're done with animals, we wash our hands before we go on to our next activity, and make it something that's normal and not out of the ordinary to do. We're already teaching kids in other parts of their life that they should wash their hands after they go to the bathroom and before they eat dinner. This is another time when we wash our hands when we're done with this activity.

A. Proctor

Trying to make it a habit, but in a fun way.

C. Klumb

Yeah, yeah, I think that's exactly it. Making it a habit and adding the songs in to make it fun. You can also, I think there are some products that are, it would be harder to do when you're out at a facility, but, there are products that are glittery soap or fun soaps. There's also glow germ that you could do with your children that's really easy to buy on Amazon, and that is pretend germs. You can have them put it on their hands, have them wash their hands and then use a black light and you can show them where they missed getting the glow germ off of their hands so that they can see the spots where they didn't get all those germs off and that can be really helpful even as an adult. When I did it recently-- Ohh, I totally missed my thumb. Yeah, I really need to focus on that more. That can be a fun visual learning tool for kids and how to wash their hands really well. And adults too.

16:32 A. Proctor

That sounds like a great tool for kids and adults alike. Is there a time of year that zoonotic diseases are more common?

16:40 C. Klumb

These animals can have these germs in their bodies year-round. In that sense, no. They're always going to potentially have these germs in their bodies and shedding it in their feces. But we do have some seasonality, at least in the upper Midwest, right? Our summers are fairly short and we tend to have our fairs and our petting zoos and our community events where we might interact with animals during the summer months. We do see more illness during the summer months, because of that, just because I think there's more opportunities for people to go to events or facilities that have farm animals.

17:13 A. Proctor

And if you just had one take away to give to parents who are planning on taking their kids to a fair or a petting zoo or a farm where there is going to be animals, what would that be?

17:25 C. Klumb

My takeaway for parents, grandparents, caregivers of children that are going to go interact with farm animals is to make sure that you explain to kids that we can share germs with animals. When we're with the animals, we're not going to eat or drink anything, and we're going to try really hard to keep our hands out of our mouths. And then, when we're all done spending time with the animals, we're going to wash our hands really well before we go on to the next activity. And I think if you can do those two things, keeping their hands out of their mouths and then washing their hands when they're done, those are going to be the two most effective things to keep everyone healthy.

18:02 A. Proctor

Is there anything else you would like to share with the listeners that we didn't touch on?

18:09 C. Klumb

I think the mindset that we always go into this with at the health department is we really value animals in our society and how they are part of our existence, right? We really look at this from a One Health concept, the health of people, animals in the environment are all intertwined, and we want people to have experiences with animals. We think it's really important and really valuable for people to have that human animal bond and to understand animals' place in the world with people. And we just are really trying to get information out to people so that they can do that as safely as possible.

18:51 A. Proctor

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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's questions you have or topics that you want to hear about on the air. You can visit our website, gpcah.org, or email us.

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Episode Resources

- Safer Farm Animal Contact Exhibits (Safer FACEs) Resources, Minnesota Department of Health
- Best Practice Resources for Disease Prevention with Animals, National Association of State Public Health Veterinarians
- Agritourism Resources: Demonstrating Hand Washing, UMASH
- Glo Germ Hand Washing Kit

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