Episode Title: Rabies Safety in the Midwest

Topic: Rabies Prevention on Agrotourism Facilities

Summary: In this episode, Andrew Hennenfent, Iowa's State Public Health Veterinarian, expertly walks us through rabies risk assessment and prevention strategies tailored specifically to agritourism farms. We also hear from Carrie Klumb, Senior Epidemiologist from Minnesota's Department of Health, who weighed in on rabies trends from her state. We break down which wildlife species pose the greatest threat, the main routes of transmission, and practical on-farm prevention tactics. The guest also discusses clinical signs to watch for, the role of environmental factors, and the critical importance of immediate response and local health department coordination.

Expert: Andrew Hennefent, Iowa's State Public Health Veterinarian, Carrie Klumb, Senior Epidemiologist of Minnesota Department of Health

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Episode Quote:

"A general rule of thumb is if it's a small prey animal, it is more likely to die when it is attacked by another animal, so the chances of them having rabies is very small."

– Andrew Hennefent

Transcript

00:10 E Ritchie

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.

E Ritchie

Rabies on farms has transitioned from dog-based outbreaks to persistent threats from wildlife such as foxes, skunks, raccoons, and bats. Control has progressed—from culling to strategic wildlife vaccination campaigns—yet the risk to farm animals endures, particularly as changing wildlife habitats bring new vectors closer to livestock settings.

E Ritchie

In June, we talked with public health epidemiologists and veterinarians to get updates on pathogens of interest on farms that have agrotourism. Andrew Hennefent, Iowa's State Public Health Veterinarian, led the discussion, and Carrie Klumb, Senior Epidemiologist from Minnesota's Department of Health, weighed in on trends from her state. The discussions have broader applications beyond just agrotourism locations. This discussion provides good recommendations and basic updates to how we used to think about rabies. Let's join in on this conversation.

E Ritchie

What kind of animals are at highest risk of carrying rabies?

A Hennefent

Only mammals can get rabies, but any mammal can get rabies. So, that includes people. There are some animals that are much higher risk than others. And then there's some animals where it's absolutely no risk for rabies. So, birds, reptiles, amphibians, fish. When I educate healthcare providers on doing rabies risk assessments, I always tell them first, determine if rabies is biologically possible in that animal and then move on from there. So, this is something that the operators of farms can take on. In theory, it shouldn't be a huge risk, if any risk, for their domestic animals. If they have wildlife, that's another issue.

E Ritchie

What is the main way that people can contract rabies?

A Hennefent

Transmission through direct contact with infectious tissues or fluids through broken skin or mucous membranes, the number one being saliva and neural tissue. Organ transplants can happen, but I would really hope that that would not be an issue on an agritourism facility.

E Ritchie

What are the main methods, then, of preventing contracting rabies, say in the context of having agrotourism incorporated into a farming operation?

A Hennefent

The prevention for an agritourism would be the vaccination of domestic animals, things that benefit rabies prevention that also benefit just general biosecurity is keeping those garbage cans covered, anything they can do to dissuade wildlife from coming on the farm and interacting with animal because it's going to be wildlife that is the highest risk for rabies in the United States no matter where you're at in United States. Bats, so any way they can mitigate bat colonies on their facility, that is another thing that would be strongly strongly advised if they find a bat colony working with either their local DNR or another group that specializes in that, that can kind of help relocate and mitigate the bat colony. There's some DIY stuff that can be done there, too, to dissuade the bat colony from returning in the future.

But again, having that biosecurity line that separates the domestic animals from wildlife will help prevent rabies as well. There are commercial rabies vaccines available in the U.S. for dogs, cats, ferrets, sheep, horses, and cattle.

A Hennefent

So, almost all the top species you'd want to show at agritourism or zoo, or any type of situation along those lines, nearly all vaccines use. And so, animals outside those are “extra label” but can be done. But again, that's something where the operator would want to work with their veterinarian. And then core vaccines for zoo animals most commonly include rabies, tetanus or clostridial vaccination and then viral a pathogen specific to that.

E Ritchie

So, vaccinating our domestic animals will reduce spread of rabies that may come from contact with wild animals. What type of wildlife contributes most to the spread of rabies these days?

A Hennefent

In the United States, we're fortunate that rabies has all but been eliminated in our domestic animals. Anytime a domestic animal gets rabies now in the U.S., it's spillover from a wild animal. The highest risk wildlife in the U.S. are bats, skunks, raccoons, and foxes. Lower risks are opossums, rabbits, rodents. A general rule of thumb is if it's a small prey animal, it is more likely to die when it is attacked by another animal, so the chances of them having rabies is very small. And then the higher risk is usually the bigger the wildlife, the more prone it is to be a predator or to be able to get in a tussle with another animal and live through that, the more of a chance that it could carry rabies or be exposed to rabies.

A Hennefent

There are different wildlife reservoirs in different areas of the United States. In the Midwest, we’re fortunate where we don't see a ton of rabies. About 2 to 3 % of bats everywhere in the US, depending the study you look at, are found to carry rabies. So bats are pretty much a consistent risk everywhere you go. We do have skunk rabies in our neck of the woods here in the Midwest. But we don't see it as often in skunks as they do see it in raccoons on the East Coast. On the East Coast, the raccoon rabies is pretty prevalent and just from the nature of raccoons, those tend to interact with other people and animals more than our skunks do. But

one way that we do see skunks, and it would be something important to highlight for these agritourism settings, is cows are naturally curious.

A Hennefent

We do see when rabid skunks come around cows that since cows are curious, they're gonna go check things out and could get scratched or bit on the nose and exposed to rabies. Something to keep in mind, especially in the Midwest to advise these operations to really wanna mitigate that skunk habitat and any skunk populations that may be near their animals.

E Ritchie

What signs should we look for when wildlife appears on farms? How does an animal with rabies typically behave?

A Hennefent

Clinical signs are that aggressive behavior, shy or withdrawn. So, something that an operator of one of these facilities would want to keep in mind if there's any unusual wildlife milling about on their farm, that might be a good time for them to contact that nuisance wildlife operator, anything along those lines. If they are seeing wild animals out during the day that they wouldn't normally expect or that have lost their fear of people, those are great indicators that they need to flag that for someone's attention and have that animal removed from their property. And if it's exposed, any people or animals on their property tested for rabies.

E Ritchie

If we find evidence of rabies on the property, do we need to be concerned about people touching surfaces the animal has come into contact with—similar to how we handle other pathogens on the farm, such as those that cause diarrhea at petting farms?

A Hennefent

The good news about rabies is it is a very weak wimpy virus. It is outside of its host, so it'll die very quickly from just the elements. I won't go through everything extensively on this list, but pretty much any disinfectant would kill it. Light will kill it. Just drying it out will kill it. So, it's not something like it is with the enteric pathogens, you'd have to worry that, this could be contaminated on a fence or a barrier between animals and people. If it is outside the animal, it is pretty much going to die very, very quickly. the stars would have to align perfectly for that to have to be any sort of exposure risk.

E Ritchie

So, Skunks are a main concern in the western portion of our Great Plains region, and bats are important to the eastern portion of the Great Plains region. What special precautions need to be taken when we have interactions with BATS? Where might we see them on a farm, particularly with agrotourist activities?

A Hennefent

Facilities have lots of outbuildings, things that might make good settings for a bat colony to set up shop is, want to remind them if they find a bat, never to touch it with their bare hands, that the bites from bats can be so small, they have little needle-like teeth that sometimes they can't even be seen with the naked eye. So can be easily overlooked. There are case reports in the United States of parents finding a bat in their kiddo's room, looking them over from head to foot, not being able to find any bites, releasing the bat, and then later on that child, unfortunately, developing rabies and passing away.

A Hennefent

General recommendation is if a bat is found in a room with someone that is sleeping or someone that cannot confidently or where you could trust them saying, “no the bat did not touch me,” we should consider that person potentially exposed to rabies since it is 100 % fatal disease, but also 100 % preventable if a person undergoes shots in a timely fashion. If that there's any question that bat

exposed to person or an animal in one of these settings that could then go on to potentially expose other people or other animals in the future, it's definitely better to test that bat than to release it and take the chance.

E Ritchie

Are there any animals that you have received questions on that did not turn out to be a concern for rabies? How do you handle those kind of calls at the health department?

A Hennefent

When I was the public health veterinarian for Washington, DC, we would often get reports of tourists on the National Mall that were bit by a squirrel. The only time we'd really ever consider a squirrel a potential rabies risk, if it was acting unusual: if it was acting aggressive, attacking someone unprovoked. I remember one instance where someone told me they were bit by a squirrel.

A Hennefent

I asked them how they were acting, and they said, “it was an unprovoked bite” and that they could send me a picture of the squirrel. You can't really tell with just the picture, but I said, why not? Just to humor them. When I got the picture, the squirrel was holding a French fry. I asked them how the squirrel got that French fry, and they said they gave the squirrel a French fry. So, they're feeding the squirrel: that is provoked. That squirrel does not have rabies. That person did not need shots. I highlight that because if there are squirrels or other little wildlife critters at one of these facilities that the visitors commonly feed, so they've gotten very used to people and are not afraid of them anymore, that would be considered a provoked attack.

So just want to keep that in mind that we wouldn't want to jump straight to rabies, but that's a good reason to discourage the visitors from feeding the wildlife. And then there’s currently no approved national post-exposure prophylaxis for animals. It's only for people.

E Ritchie

How should farmers prepare to respond to an incident that might include a rabies exposure? What should we think about on the farm? How prevalent is rabies in our Great Plains region?

A Hennefent

If there is an event where it looks like a worker or a visitor was exposed on an agritourism site, the best advice would be for them to contact their local public health department or their state health department to kind of run through those risks and get some assistance to see if anyone needs risk assessments and potentially rabies shots. And then wanted to share this too, that since we've done a good job of eradicating rabies, the rabies strains that were used to circulate in dogs in the US, the most recent human deaths. And these aren't stuff that crop up a lot, but there's been five to 10 human deaths a year. They're either related to bats or from someone being exposed outside the United States. In Minnesota, Nebraska, Illinois, a lot of our Midwest states, the most recent human deaths have been caused by a bat.

A Hennefent

Iowa, our last human death from rabies was in 2002 and that was also from the bat variant. If you look into each of these, it's the same type of story. If it's a death within the last 20 years, it’s typically from a bat exposure. And then the second most recent is from the 70s, 60s or 50s and is either a canine or skunk exposure.

E Ritchie

If you see a skunk walking around in the daytime, is that enough to be concerned that it has rabies?

A Hennefent

It can be, there’s, because we get the same question regarding raccoons and nine times, well, I'd even more than that, but it’s usually some other disease other than rabies here in the Midwest. We're very fortunate, but anything that they're sick with could potentially

make them get outside of their normal schedule. So that’s something where always best to keep your distance from those wildlife and remove them from the property if they look like they're acting sickly. With raccoons, what we commonly see is distemper. So that's pretty common in raccoons in the Midwest. In Iowa, we haven't had a rabid raccoon since the year 2000, luckily. But yeah, just any of those larger animals, it might not be rabies, it probably isn't rabies but could definitely be carrying something else that could make a person or animals on the property ill.

C Klumb

Yeah, Andrew covered it really well. That's the same approach we take in Minnesota. I will say that our Board of Animal Health does operate under the pretense that any skunk is rabid until proven otherwise. So, in terms of like how they approach skunk exposures, they're incredibly conservative in our state. So if a skunk is like out in the daytime, they are concerned like there could be something wrong as Andrew said it could be a variety of different diseases causing that animal to be out in the daytime and if they're staggering or acting abnormally sickly or like aggressive obviously that's more concerning but yeah our board of animal health in terms of like when they interact with veterinarians or farmers

C Klumb

If we can't like test the skunk and the skunk has had some sort of exposure with one of their animals, they will operate as if that skunk were positive out of an abundance of caution.

A Hennefent

Yeah, we would in Iowa too.

E Ritchie

If someone is bitten by a skunk or other animal with high rabies risk, how much does it cost to test the animal to see if it has rabies or is it better and as cost effective to just presume rabies the animal has rabies and get treatment?

A Hennefent

The best thing if exposed to like a skunk, raccoon, any of those, those bigger animals or a bat would be test to rule out rabies if an exposure happened. And if it can't be tested, then take steps to quarantine those animals and if a person was exposed take they need to pursue post exposure prophylaxis because again rabies is 100 % fatal but also 100 % preventable in most situations and I strongly strongly encourage people if it is a wild animal and there's any questioners exposed to pursue testing because in Iowa if there's a human exposure our State Hygienic lab will test that animal for free.

A Hennefent

Our veterinary diagnostic lab will test for a fee when everything shakes out. It's maybe like $100 total. And the only reason I bring up the pricing is because the cost of post-exposure prophylaxis in a person can be like $3,000 to $8,000. So even if you have to pay for the animal test, it is substantially less expensive financially plus the time a person would need to spend going back and forth to the doctor's office to get those shots. So much, much easier all around and alleviates concern much sooner to get that animal tested.

C Klumb

Ours is our approach is very similar in Minnesota, except for we only have one place where people can bring animals. Every animal in the state has to be brought to the University of Minnesota's Veterinary Diagnostic Lab.

C Klumb

So regardless of whether or not there was a human exposure, there is a cost for every test in Minnesota, but it's really nominal. It's like, it's $32 for that test, which as Andrew said, so much more affordable than getting the vaccine series. We had done a study back in 2018 because rabies post-exposure prophylaxis isn't reportable in the state of Minnesota. And we also, as a health department, don't control the biologics at all, which now the prices are so out of date because it's from 2018. We tried to actually like call people back when we recommended they get shot, see if they actually went through with it and then have them send us their bills and also

talk to urgent cares, emergency departments, and then clinics to get a median cost. And the median cost is around $7,000 in our state before any insurance.

E Ritchie

So, if post-exposure shots cost around $7000- $8000, before insurance. It seems worth it to take the animal to the lab to test it for rabies if at all possible. Who is recommended to get the 2-shot pre-exposure prophylaxis series?

C Klumb

We also always try to put a plugin for vet techs because they are generally not vaccinated and most likely to be exposed. Like get your vet techs pre-exposure vaccinated at seven times cheaper than if you have to do workman's comp because they got bit on the job.

A Hennefent

And the big difference between being vaccinated and other never being vaccinated. If you've never been vaccinated, you need immune globulin, which that's the most expensive aspect. that's right around where the person was exposed to rabies around the bite or anything. So even though if a clinic gets their vet tech the pre-exposure series and then still has to pay for a post-exposure series later, they've eliminated immune globulin [test], so they've eliminated the biggest cost of the whole process.

E Ritchie

One of the key takeaways from our conversation with Andrew and Carrie, was prevention strategies for agrotourism facilities. These strategies focus on vaccinating domestic animals, ensuring that domestic and wild animals are separated, improving biosecurity measures to discourage wildlife interaction – for example, covering garbage cans, and mitigating bat colonies. It is also important for agrotourism facilities to discourage wildlife feeding, as provoked interaction with animals increases risk of rabies exposure.

If unusual wildlife behavior is observed, such as aggression or daytime activity, the animals should be removed and tested for rabies. Farm operators are advised to contact their local health departments for guidance on responding to an exposure incident. Remember that rabies is preventable and mostly treatable in humans if detected early.

E Ritchie

Look for signs of bat colonies near your home, barns or machine sheds; such as small, dark pellets resembling mouse droppings, often found near entry points. Other signs may include hearing scratching, squeaking or fluttering sounds, especially at night; seeing bats swooping in and out of your roofline at sunset or sunrise; musty or ammonia-like odors; dead bats or bat cubs; sightings of bat bugs or parasites; grease or stains around entry points; stains on ceilings, walls or insulation; and/or visible entry holes or gaps.

If you do find a bat colony, work with either your local DNR or another group that specializes in mitigating bat colonies to help relocate and mitigate the bat colony.

E Ritchie

Under the resources for this episode, you can find a link to the Iowa Health and Human Services rabies webpage, where you can find information for the public, providers and veterinarians, as well as the 2023 Rabies Map of Iowa. This webpage also has a Bats of Iowa Communication Toolkit, or you can visit the second link listed under the episode's resources to find this toolkit. We have also included the link to the Minnesota Public Health website, where you can find a video on how to safely capture a bat for rabies concerns.

E Ritchie

Listen in on the *FarmSafe* podcast to join in on the conversation about keeping safe on the farm.

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

- **Updated Iowa Information** at https://hhs.iowa.gov/center-acute-disease-epidemiology/rabies-information-public-providers-and-veterinarians (includes social media images for sharing and posters)
- **Bats of Iowa Communications Toolkit**
- **MN Public Health website, including a video on how to safely capture a bat for rabies concerns:** https://www.health.state.mn.us/diseases/rabies/index.html

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