Biosecurity
Routes of Infection
Means of Transmission

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You may already know a lot about how to prevent illness from spreading from person to person. But did you know that animals can pass diseases between each other too?

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When animals get sick, we need to help them get better and make sure other animals don't get sick too. The first step in keeping animals healthy is knowing how animals get sick, what illness and how it spreads from one animal to another.

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Objectives
In this lesson, we will introduce you to new animal diseases. Don’t worry, you are not expected to know their diseases ahead of time but are expected to remember them at the end of the lesson. They are for example:

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What You Need to Know to Prevent a Disease from Spreading
Knowing the answers to the following 6 questions helps us to develop ways to prevent the disease from spreading to other animals:

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The Disease Story
Let’s explore the disease stories of two different owners and their animals. As you listen to the stories, take the notebook into the reflection to help you answer the six questions for each story.
Inhalation: Some disease agents can be in the air that we inhale or person breathes. They get into the large airways and cause disease. A good example of this route of infection occurs in respiratory organs by breathing in the foreign particles.

Breaks in skin: One of the skin’s main functions is to act as a barrier to keep out infections. But if there is a break in the skin, like a cut or a bite, some disease agents can get in to cause infection. This is what happens with Rabies. A break in the skin is also the way that sheep and goats get caesial lymphadenitis, or CL for short, caused by Corynebacterium. Be careful! This is a deadly disease.

Mucous membranes: Mucous membranes are moist membranes that line our noses and all body cavities open to the exterior, such as the respiratory, digestive, urinary, and reproductive tracts. Disease agents can be absorbed by the mucous membranes and cause infections there. The eye, mouth, and nose are all places that mucous membranes are exposed. Mucous membranes of the eye is the main route of infection for pin eye. In utero: Disease agents can infect a fetus while it is in its mother’s uterus before being born. Some viral diseases, like HIV, can infect a fetus through the bloodstream.

Routes of infection were used for Ben and Gus:

- Inhaled
- In utero
- Inhaled
- In utero
- Inhaled
We call this "means of transmission".

The sick bull attacked by another sick animal that was infected with disease. Until it dies, the sick bull can spread the disease by biting other animals. This is called direct contact because it was spread from one animal to another.

How did each get their disease? Can it spread to other animals?

Remember Gus and Ben? How did each get their disease? Can it spread to other animals?
Leptospirosis: After a series of abortions in our dairy herd, leptospirosis was diagnosed as the cause. The vet said that this disease is spread by rats in the barns. He told us to make sure rats and other rodents can't get into the feed storage and recommended an effective vaccine schedule for the cows.

Transplantation: I always enjoy watching our barn cats and playing with the kittens. The vet was out visiting our goats and noticed the kittens. She was concerned the kittens might be using the goat grain as a litter box and spreading leptospirosis to our goats. We're going to keep a litter box in the barn for the cats and keep the grain covered from now on.

Bingeng: I was raising a call for my 4-H project and took her to the county fair. She did well there. I was going to enter her in the state fair. I was grooming her before the show when someone next to me asked if they could borrow my brush because they couldn't find theirs. My call was a blue ribbon! So I signed her up for the state fair. But sadly, just before the state fair started I noticed licks, nasty patches on her skin. Turns out she has the ringworm fungus! That's when I remembered leaving my brush in the county fair. Big mistake!

Bluetongue: Our lambs were out on pasture in the late summer. Boy, were there a lot of small biting flies! Then, within a week or so our lambs started having runny noses and noisy breathing. Their faces and tongues started swelling, and they had high fevers. Many died, and the ones that survived didn't do so well for a few months. Turns out those flies were carrying the Bluetongue virus.

PED: My family has a pig farm. Last spring we had a litter that had diarrhea. Our veterinarian had the manure tested and the Porcine Epidemic Diarrhea virus was found. We lost almost all the piglets in that litter. The vet told us that there was another selected farm that uses the same feed mill that we do. She thinks the delivery truck may have brought PED into our farm. We are much more careful now and follow much stronger biosecurity rules when working with our pigs. It seems to be working. We've had much less diarrhea and a lot fewer deaths since then.

CL: We kept a small herd of dairy goats. A few days after we bought a new dairy goat we noticed a lump just behind its ear. We didn't think much about it until a couple of days later it became an open sore that was oozing pus. The other goats were sniffling and licking it. Yuck! A few weeks later we noticed other goats had tumors too. Our vet said it was something called caseous lymphadenitis, but the name CL is a lot easier to say and remember. The pus is full of a type of bacteria that can spread to other goats, so we put the goats with tumors and abscesses into a separate pen away from other goats.
Summary

Means of Transmission

Direct contact: Animal-to-animal contact
Indirect contact: Animal-to-soil contact

Direct contact:
- Contact with dogs or animals that carry the disease but are not infected
- Contact with oral fluids, blood, or urine

Indirect contact:
- Contaminated fomites or vehicles
- Contaminated excreta

Examples:
- Feline distemper
- Rabies
- Canine parvovirus
- Canine distemper
- Contaminated soil or water

Biosecurity

References


Credits

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