

People Can Catch Diseases from Their Pets

[Announcer] This program is presented by the Centers for Disease Control and Prevention.

[Tracey Hodges] Hello, I'm Tracey Hodges and today I'm talking with Dr. Carol Rubin, Associate Director for Zoonoses and One Health at CDC. Our conversation is based on her article about zoonotic diseases in our pets, which appears in CDC's journal, *Emerging Infectious Diseases*. Welcome, Dr. Rubin.

[Carol Rubin] Thanks, Tracey. I'm pleased to be here.

[Tracey Hodges] Dr. Rubin, tell us about One Health.

[Carol Rubin] Well, One Health is a concept that takes into account the relationship among human health and animal health and the environment. One Health recognizes that the three sectors, that is, people, animals, and the environment, are closely connected to each other, and that movement of diseases from animals to humans can be influenced by changes in the environment they share. However, because there's no strict definition for One Health, the phrase 'One Health' can mean different things to different people. Some people think of One Health as a return to simpler times when most physicians were generalists rather than specialists, and physicians and veterinarians communicated regularly. However, other people think that the One Health is especially important now because we live in a time when there is an increase in the number of new diseases that affect human health.

Diseases that pass between people and animals are called zoonoses. And recently, researchers have determined that more than 70 percent of emerging infectious diseases in people actually come from animals. Some of these diseases start in wildlife that is being displaced by deforestation in remote areas of the world. But they can move around the globe quickly because people and other things are constantly crossing borders. Examples of these new emerging infectious diseases include viral hemorrhagic fevers, like Ebola virus, respiratory diseases, like SARS, and novel influenza viruses, like pandemic H1N1. What these serious diseases have in common is that they all start as zoonoses in the animal kingdom.

One Health is an approach to looking at new diseases and other adverse health events by taking a holistic viewpoint that considers human health, animal disease, and environmental changes.

[Tracey Hodges] You talk about small companion animals in your article. Are they what people think of as pets?

[Carol Rubin] Over the centuries, animals have been domesticated by people who brought these animals into the home environment to share food and shelter. These animals are what we think of as "pets." In our paper we narrow this down to consider just dogs and cats.

Nearly one third of households in the United States actually have dogs and cats living in the home. It's also true that many people live with less traditional pets, including reptiles, rodents, exotic birds, chickens, and arthropods, like tarantulas. These unusual pets pose different risks to

human health and may require additional precautions from those associated with dogs and cats. For example, amphibians and reptiles normally have bacteria, like salmonella, that don't cause illness in the pet, but they may cause illness in people. So people who own pet frogs or lizards should follow certain guidelines when cleaning cages or tanks, especially when there are small children in the home. The CDC website has a great deal of good information about how to handle non-traditional pets in a way that decreases chances of human illness.

[Tracey Hodges] What are the zoonoses that can be transmitted to people by direct contact with cats and dogs? And what are the reverse zoonoses that cats and dogs might get infected with by close contact with people?

[Carol Rubin] There are many diseases that people can get directly from cats and dogs, and there are also some diseases that can be transmitted by insects, such as mosquitoes or sand flies that first bite the cat or dog and then transmit the disease when they bite humans. Our paper contains a table that lists most of the known zoonoses that pass from dogs or cats to humans.

Diseases, or zoonoses, that pass directly from dogs and cats to people can be grouped by the way they're transmitted. Diseases that move through animal bites or scratches include bacteria like *Bartonella* that cause cat scratch fever, viruses that cause rabies, or diseases like ringworm that are caused from fungi.

Other zoonoses can be transmitted from animal feces when parasite eggs are inadvertently eaten by humans. Examples of these diseases include roundworms, toxoplasmosis, and coccidia. Other zoonoses, like salmonella, are bacteria that are also passed through a fecal-oral route from animals to people. And contact with animal urine can cause infections like leptospirosis.

Reverse zoonosis are diseases that do not normally occur in dogs and cats but can be passed from infected people to their pets. Examples of these include tuberculosis, MRSA, and flu. Although these are not usual diseases for animals, and they don't readily pass from animal to animal, reverse zoonoses can make dogs and cats very sick.

[Tracey Hodges] What is the public health role in dealing with zoonotic infections among small pets?

[Carol Rubin] Local, state, and national public health officials seek to prevent human disease and that, of course, includes zoonotic diseases.

For example, a city public health department was recently notified that a hospitalized child had tested positive for an organism called *Brucella canis*. This is a bacteria that is seen in dogs but mostly it's in large breeding colonies. The disease is not often discovered in pet owners. When the public health officials were notified about the child's laboratory result they interviewed the family and determined that a puppy had recently been purchased from a pet store. The health officials tested the dog and traced the dog, and the disease, back to the pet store where it was purchased.

The public health officials also investigated where the dog originated and followed up with her littermates to see if the dog, or their owners, were sick. This zoonosis, *Brucella canis*, is required to be reported in only a few states. However, astute physicians recognize that public health departments are a resource for even informal reporting of zoonotic diseases.

[Tracey Hodges] Do the zoonoses in pets have to be reported to any agency, as are certain human diseases?

[Carol Rubin] For the most part, zoonotic diseases in dogs and cats are not reportable in the United States or elsewhere in the world. The big exception to this is rabies. In the United States and in most developed countries, rabies is required to be reported to state health authorities. This reporting results in careful follow-up to identify all humans who may have been exposed to an animal with rabies, or even an animal with suspected rabies. Without treatment before symptoms appear, rabies is a fatal disease in people. All exposed persons are given post-exposure prophylaxis, which is medicine that prevents the rabies virus from spreading in the body.

Other zoonotic disease reporting varies by state. As mentioned earlier, *Brucella canis* is reportable in some states. This disease is being watched as a possible increasing zoonotic problem so it's possible that more states will require reporting. And recently, the Council of State and Territorial Epidemiologists recommended that canine leptospirosis become a reportable disease because it appears to be occurring with increasing frequency in humans.

[Tracey Hodges] Is there any kind of surveillance system in place now that monitors zoonotic diseases and infections in pets?

[Carol Rubin] No, there isn't an organized surveillance system that counts the number or types of zoonotic diseases that occur in pets. When animals are sick, they're often treated by independent veterinary clinics. If a fairly minor zoonosis is diagnosed, it's unlikely that information will ever go into any kind of surveillance system. That information should, however, be communicated to the pet owner's health care provider.

When veterinarians see an increase in the number of animals that come into a clinic with a zoonotic disease, it's likely that the information will be communicated through informal networks. Veterinary associations at city, state, national, and even international levels are an excellent way for veterinarians to communicate with each other about unusual cases or changes in the number of animals they see with a certain disease. The American Veterinary Medical Association and the World Small Animal Veterinary Association websites provide useful information to pet owners.

[Tracey Hodges] Is it possible to develop a viable surveillance system for pets, nationally and globally?

[Carol Rubin] It's important to consider ways to conduct surveillance for zoonotic diseases in pets. These animals share such a close relationship with humans, and it's of public health benefit to better understand disease transmission between pets and people. The likelihood of

successful surveillance system for zoonoses in pets increases as more veterinary clinics and hospitals switch to electronic medical records. An effective global network for surveillance of zoonoses in pets presents a major political, financial, and scientific challenge.

[Tracey Hodges] Should veterinarians be more aware of zoonotic diseases in pets?

[Carol Rubin] Both veterinarians and physicians should be aware of zoonotic diseases. Veterinarians see pet owners in the same office with their pets so public health education about zoonoses can occur in a real time scenario. The veterinary exam room is often an ideal place to discuss zoonotic diseases and explain what pet owners can do to minimize both human and animal illness.

Veterinarians are trained to recognize zoonotic diseases, and they may be the first health professional to recognize that a zoonotic disease is present in a home or a community. Since, for the most part, there is no method for formal reporting of zoonoses in animals, it's important that the veterinarian communicate potential health risks to the pet owner and also to the owner's physician. The One Health approach encourages open lines of communication between physicians and veterinarians and local medical and veterinary associations.

For physicians, it's important to ask about pets in the home as part of a patient's health history. This questioning would optimally include questions about the kind of pets and the health of those pets. There are so many positive outcomes to having a pet in a home. Some of the many benefits of pet ownership are tied to the animal-human bond which can provide strong emotional support. Although some pets provide personal protection or function as service animals, most pets are considered to be part of the family. Pets often are the impetus for humans getting more exercise and the process of taking care of a pet may make a person take better care of themselves.

[Tracey Hodges] What can we as pet owners do to protect ourselves, as well as our pets, from zoonotic diseases?

[Carol Rubin] There are several basic steps that dog and cat owners can take to protect themselves and their pets from zoonotic infections.

Pet owners should make sure that their animals are vaccinated, especially against rabies. Pet owners should provide protection against external parasites like fleas and ticks. Owners should also test and treat to control the internal parasites; this protects the animal and also prevents the dog or cat from shedding parasite eggs that can contaminate the environment. Periodic physical examinations for pets will increase the likelihood that vaccinations and de-wormings are appropriately done. And newly adopted or rescued animals should be examined and treated by a veterinarian.

Other common-sense precautions for pet owners include removing feces from cat boxes daily; washing hands after handling animals; not handling animals that you're not familiar with; avoiding animals if you're immunosuppressed; not letting dogs drink from the toilet; trying to avoid being licked by animals, in general; avoid feeding raw meat; wear gloves when gardening

and washing hands thoroughly when finished gardening; not sharing food utensils with pets; clipping cat claws frequently to lessen the risk of scratches; minimize the interaction that your dogs or cats have with wildlife---for example, owners should not leave pet food outdoors as that can attract wildlife, like raccoons.

[Tracey Hodges] Thank you, Dr. Rubin. I've been talking with Dr. Carol Rubin about her article, *Surveillance of Zoonotic Infectious Disease Transmitted by Small Companion Animals*, which appears in the December 2012 issue of the CDC's journal, *Emerging Infectious Diseases*. You can see the entire article online at cdc.gov/eid.

If you'd like to comment on this podcast, send an email to eideditor@cdc.gov. I'm Tracey Hodges, for *Emerging Infectious Diseases*.

[Announcer] For the most accurate health information, visit www.cdc.gov or call 1-800-CDC-INFO.