One Health & Zoonotic Diseases Chapter

Introduction

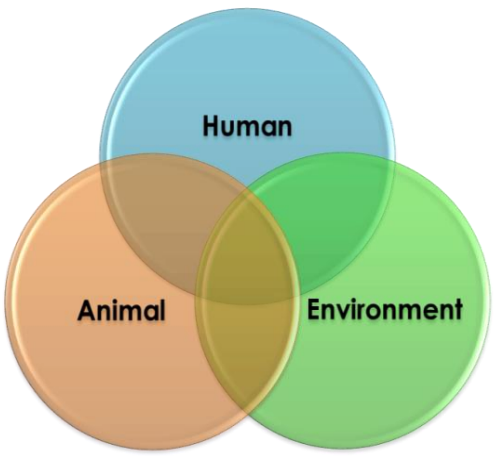
People and animals have been living closely together for centuries. We continue to interact often with animals—pets, livestock, small stock, recreational, zoo and wild animals. The environments we share as animals and humans are also important. Constantly changing conditions such as the weather, natural disasters, and human habitat developments expanding into farm/ranch lands and wildlife habitats link the environment people, and animals together. People, animals, and insects frequently interact and share environments, and because of this, diseases are passed back and forth. Some old disease reemerge, and new diseases can appear. Our efforts to keep food and water sources safe, protect the environment, and safeguard people and animals from diseases must also overlap.

What is One Health?

One Health is the belief that the health of humans, animals, and the environment are interconnected—it is like a three piece puzzle. The health and safety of one piece influences and affects that of the whole.

One Health can also be seen as a giant umbrella covering the work of different partners linked underneath. These partners include veterinarians, farmers/ranchers, gardeners, doctors, nurses, scientists, wildlife biologists, zoo keepers, trainers, livestock/small stock breeders, event managers, and environmental health experts.

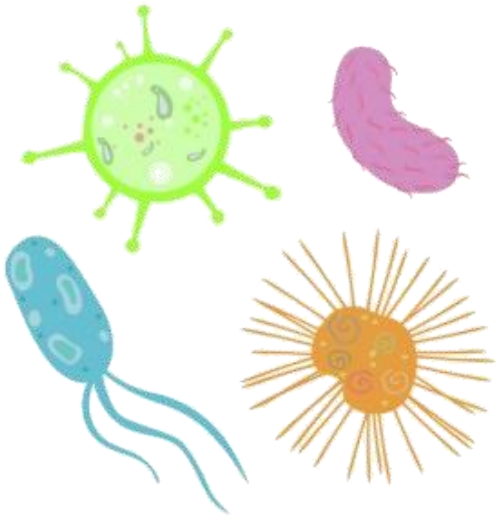
The main goal of One Health is to build and strengthen relationships between human health, animal health, and environmental health partners. One Health is about communication, collaboration, disease detection, education, and prevention. It is about keeping the puzzle pieces informed, educated, and connected.



What are zoonotic diseases?

Zoonotic diseases, or zoonoses, are diseases that can be spread between animals, people, or produce. Zoonoses are one example of how the health of people is related to the health of animals and environment. Some of these diseases you may be familiar with or have heard of, such as *E. coli*, influenza, or rabies. Others, including Q fever, toxoplasmosis, or psittacosis, may be new to you. There are even some diseases that scientists do not know much about because they are so new or are not seen very often in the United States. These are called emerging diseases.

Zoonotic diseases can affect people and animals differently. In some cases, the disease can cause sickness in both animals and people. Sometimes, animals are just 'carriers' of the disease-causing germ, but don't get sick. The germs that cause zoonotic diseases can be **viruses**, **bacteria**, **fungi**, or **parasites**.



There are many different zoonotic diseases, which have the potential to spread in many different ways and over long distances. This is true for several reasons:

1. We interact with animals, animal products, or produce in our daily lives.
2. We raise animals for food, work, enjoyment, or business.
3. We keep animals in and around our homes as pets, work, or recreation.
4. We come into close contact with animals at fairs, events, shows or zoos.
5. We may encounter wildlife or insects that spread disease when we are outdoors.
6. We eat many products that come from animals, such as eggs, milk, cheese, and meat.

How are zoonotic diseases spread?

The way a disease can be spread is called the mode or route of transmission. There are five major ways that zoonotic diseases can be spread. Remember, these diseases can be spread in both directions - from animals to people and from people to animals.

A. **Direct contact**— the disease can be spread through animal bites or scratches or by interacting very closely with or touching an animal that has a disease-causing germ.

B. **Indirect contact**—the disease can be spread by touching non-living objects (called fomites), that an animal with a disease-causing germ has had contact with. This can include buckets, brushes, towels, shearing and grooming tools, animal bedding (such as straw shavings), equipment for animal health checks and tagging, and even fences that sick animals may rub up against.

C. **Oral**—the disease can be spread by eating food or drinking water or milk with a disease-causing germ. This can happen if milk is not pasteurized or if food is not cooked to the correct temperatures that prevent growth. Also, if someone does not wash their hands before eating or drinking after handling animals with a disease-causing germ. Some produce can carry disease-causing germs as well.

D. **Inhalation**—the disease can be spread by breathing in a disease-causing germ from the air. This often happens when an animal is giving birth and droplets from reproductive tissues (placenta or fluids) get in the air OR when the environment has disease-causing germ in the soil from an animal's urine or feces and a person breathes in the dust particles.

E. **Vector borne**—the disease is spread by some type of insect or bug (like mosquitoes or ticks) that picks up the disease from an animal and then transmits to a person when they are bitten.

How can we prevent zoonotic diseases?

We don't always know if an animal is carrying a disease. This happens because we can't see the disease-causing germs and because the animals might not get sick. Luckily, there are several steps that we can follow all the time to make sure we and our animals stay healthy.

The most important thing is to properly wash hands before and after interacting with animals. Good hand hygiene is key! The second thing is to be aware of the disease-causing germs that animals can carry and know how they can be spread to people. Be a responsible and knowledgeable animal owner, handler, or trainer. For example, if you are at a public fair with your animal, remind other people to wash their hands—provide washing stations and antiseptic cleaners if needed. Other ways to stay safe include handling and preparing food safely, keeping insects and bugs away from your home, animals and barns, and being careful around animals that could be aggressive, protective or dangerous. Staying safe around pets, livestock, small stock, and wild animals is always important.

To keep ourselves healthy, we also need to keep our animals healthy. Make sure you are caring for your animals properly. Give them fresh food and water, clean their bedding often, and exercise them and yourself as well. Have your local veterinarian do regular health examinations and give vaccinations and medications as needed. If one animal gets sick, keep it separated from other animals until it gets better so that other animals don't get sick as well. Also, if you are travelling with animals, try to keep their stress level low and limit travel to minimal amounts, at cooler times and when traffic and traffic waits are low.

Who are some of our One Health partners in Arizona and in the United States?

Some familiar partners in Arizona that you may know about include veterinarians, other 4-H or FFA groups, breed associations, humane societies and animal control organizations. Additionally, there are many other local, state, and federal agencies that play a part in One Health.

- Local county public health departments
- Arizona Department of Health Services
- Arizona Department of Agriculture
- Arizona Department of Game and Fish
- University of Arizona Veterinary Diagnostic Laboratory
- Arizona Veterinary Medical Association
- Centers for Disease Control and Prevention
- United States Department of Agriculture
- Animal and Plant Health Inspection Service (branch of USDA)
- University of Arizona—College of Agriculture & Life Sciences & Cooperative Extension
- Arizona 4-H
- Arizona Department of Education
- Arizona Farm Bureau

ARIZONA DEPARTMENT OF HEALTH SERVICES

Maricopa County Public Health

ARIZONA DEPARTMENT OF AGRICULTURE