ZOONOSIS

ZOONOSIS: **Diseases that can be passed from animals to humans, and humans to animals**
Most diseases are spread through the oral route or by penetration through breaks in the skin or mucus

Precautions:

- **ALWAYS WASH YOUR HANDS AFTER HANDLING ANYTHING USING DISINFECTANT SOAPS.**
- **Make certain to wash before handling any food or putting your hands in your mouth or up to your face and eyes.**
- **Wear gloves** when cleaning and disinfecting pens, food and water bowls, etc.
- Wash your hands after removing the gloves. There may have been a break in the gloves.
- Wash and disinfect any wounds received immediately.
- **Seek prompt medical attention** for any scratches, bites or wounds received on the job.
- **Avoid** eating food in areas where animals are housed or treated.
- **Avoid** keeping food in the refrigerator with veterinary drugs like vaccines or laboratory samples. These are considered biohazards.
- **Avoid** letting animals lick your face or wounds
- **Use extreme care** to avoid being bitten when handling fractious animals**.**
- **If you do become ill**, let your physician know that you work with animals.
- The **people most at risk are the elderly, young children, and people who are immune-compromised**, such as HIV patients or people taking immunosuppressive drugs.

If you don't know if a disease or condition is zoonotic or not, assume that it is and treat it accordingly. Wear gloves and masks, isolate the animal, wash hands,

DISINFECT, DISINFECT, DISINFECT!

WHENEVER YOUR HORSE HAS DIARRHEA USE COMMON SENSE TO PREVENT DISEASE FROM SPREADING TO HANDLERS OR OTHER HORSES: WEAR GLOVES, CHANGE CLOTHES, WASH HANDS, USE FOOTBATHS WITH APPROPRIATE DISINFECTANT BEFORE ENTERING, AND WHEN EXITING THE AFFECTED HORSE'S STALL.

VACCINATIONS

All staff should also be vaccinated against tetanus.

These vaccinations are effective for 10 years.

OSHA REGULATIONS

At one time it was believed that OSHA regulations did not apply to animal shelters and were only really important for large medical offices, factories and other really hazardous occupations. Small shelters felt safe from OSHA scrutiny. This is not the case.

MAKE CERTAIN THAT THE SHELTER IS IN COMPLIANCE WITH ALL OSHA SAFETY REGULATIONS.

Make certain that all material safety data sheets (MSDS) are available and readily accessible. Discuss their use with the staff.

Training of staff for techniques of proper and safe cleaning, proper dilution of disinfectants and other chemicals is essential.

OSHA concerns about worker safety also consider the general safety of the environment and worker techniques. Attention should be paid to the use of caution signage for wet floors when mopping, headphones to block out excessive noise in the kennels, improper use of extension cords which people can trip over, teaching techniques for lifting heavy objects (or animals) that prevent back injuries, etc.

Make certain medical waste is properly disposed of, including needles and syringes.

Make sure you have eye wash stations and a first aid kit that is readily available.

(This is by no means a complete list, but just some of the OSHA regulations that must be adhered to. It is strongly suggested that you consult with OSHA for the complete guidelines.)

TRAINING

Understanding animal behavior is one of the keys to the prevention of animal bites.

Bite wounds are particularly dangerous because the inoculation of bacteria into puncture wounds makes them more difficult to properly clean and disinfect. The resultant infection can sometimes lead to serious illness that even requires hospitalization. Staff should be taught how to safely restrain animals, how to read their body language and when to call for assistance.

It is important to recognize the signs that an animal is sick.

Some signs are more obvious than others. Important symptoms of disease may include: Depression, pale gums, loss of appetite, dehydration, fever, diarrhea, ocular and nasal discharges, reddened eyes, hair loss or reddened skin, shaking the head, coughing, sneezing, lethargy, straining to urinate or defecate, blood in the stool or urine, lumps or swellings, penile or vaginal discharges, neurological problems like star gazing, head tilt, head pressing, seizuring, etc.

Diseases are transmitted by a number of mechanisms.

Most diseases are either caused by bacteria, parasites, viruses or fungi (the causative agent of ringworm) and are transmitted by the fecal-oral route or through breaks in the mucus membranes or skin. Staff should understand the modes of disease transmission in order to keep themselves healthy and safe.

> The most commonly encountered diseases are caused by direct contact with infected tissues, aerosolized particles, contaminated feces, urine or saliva, or through contact with fomites. Fomites are contaminated objects like clothing, hands, mops, cleaning or grooming utensils, etc. Fomites are one of the most common ways diseases are transmitted and one of the most overlooked mechanisms. They are particularly dangerous when dealing with viruses or fungi that can survive in the environment for long periods of time and are resistant to routine disinfection techniques

ZOONOTIC DISEASES
DISEASES AFFECTING HUMANS AND HORSES

Rabies
This is a highly fatal disease, although human cases are rare. The risk of exposure to rabies through horses is low, but there is still the potential for infection. An equine infected with rabies can exhibit a variety of symptoms, making it difficult to diagnose. Some horses may initially rub or bite the area of inoculation intensely. An infected horse may also colic, or show signs of lameness. It may be difficult to conclude that a horse is infected with rabies because there may be an absence of visible wounds (a possible route of infection), and some of the neurological signs of rabies can be present with other neurologic diseases. Because it can be unclear during treatment of a horse what is causing their illness, it is important to consider rabies a possibility and handle the sick animal according to directions provided by your veterinarian. Rabies can be transmitted from horse to human via saliva; a small abrasion or cut on your hand can be an open door in which the rabies virus can enter your body. Rabies would be considered directly transmissible from one mammal to another without requirement for an in-between host. Because the presenting signs of rabies can be so variable, any horse with neurologic signs must be initially considered a rabies suspect, and should be handled accordingly.

Encephalitis
Another group of diseases with zoonotic potential are diseases classified as mosquito-borne arboviruses. Mosquitoes are obligatory biological vectors for transmission of these viruses. These diseases include eastern encephalitis, western encephalitis, venezuelan encephalitis, and West Nile virus. These diseases most likely exhibit many of the same symptoms in horses as rabies, therefore they are to be considered when a veterinarian is working on a horse with acute neurologic disesase. It is important to note that none of these arboviruses are transmittable directly from horses to humans under normal circumstances. However, if the horse dies from their illness, and a necropsy is performed, there is a risk present for disease transmission from handling infected blood and cerebrospinal fluid. If a post-mortem examination is performed, it should be done very carefully under protected conditions to lower the risk of infection. West Nile virus infection has received a great deal of publicity since its introduction to the United States. Through effective vaccination programs, the incidence of the encephalitis diseases has been reduced and controlled. Contact your veterinarian to discuss a vaccination program.

Prevention of encephalitis through vector control:

- drainage of standing water to reduce mosquito replication
- use of insecticides during times of high mosquito populations (usually via local government)
- sentinel pheasants (pheasants are susceptible to infection with EEEV) or light traps (and subsequent virus isolation from mosquitoes that are caught) to alert public health officials to the presence of virus in a given geographic area
- vaccination of horses
    - This is particularly critical from a public health point-of-view for VEEV because of the role of horses as reservoir hosts for the virus.

DISEASES CAUSING DIARRHEA

There are numerous diseases that can cause diarrhea in horses. Some of these can be transmitted directly to humans via the fecal-oral route. The following is not a complete list. It is especially important to use good hygiene control mechanisms when working with a horse that has diarrhea. Other horses are also potentially at risk of contracting illness from the affected horse. Any horse or human receiving antibiotics, especially oral antibiotics, is at greater risk for getting diarrhea or acquiring an enteric (gastro-intestinal) infection from a horse with diarrhea.

Salmonellosis

Salmonellosis is a very common gastrointestinal problem in horses and humans caused by the genus *Salmonella*, a bacteria. Sudden diarrhea is usually the typical sign of infection, although there are many other symptoms that can occur. Salmonellosis usually occurs after antimicrobial therapy or after the animal has been in a stressful situation (shipping, training, or hospitalization). Humans can become infected with salmonella bacteria from their horses directly through the fecal-oral route. A relatively high level of salmonella organisms need to be ingested in order to cause a healthy adult to become sick, but if that individual has a condition (immunosuppression) or therapy (antibiotics) that causes their immune system to be compromised or suppressed, the risk of infection from a lower number of organisms is much greater. There are multiple organisms that cause acute or chronic diarrhea, so it is important to be aware that your horse can pass along an illness to you even before a diagnosis can be reached. Arriving at a diagnosis includes submitting fecal samples to a laboratory for culture or other testing. It is important to note that even with testing, it can still be difficult to arrive at a conclusive result, and a definitive diagnosis may not occur. If your horse develops diarrhea, you should separate it from other horses, and use proper hygiene around the horse. Contact your veterinarian for advice.

Clostridium difficile

Clostridium difficile is another bacterial infection of the gastrointestinal tract that can cause diarrhea and colitis in horses and humans. Like salmonellosis, *C. difficile* infection can be diagnosed by submitting fecal samples to a laboratory, but those samples may not guarantee a definitive answer. Infection of *C. difficile* usually occurs after antibiotic administration and/or hospitalization, although random cases do occur. There has never been a reported case of transmission of *C. difficile* infection from horse to human, but there is also very little research or reporting that has been done on this potential for transmission. Therefore, because it is uncertain if *C. difficile* is a zoonotic organism, it is best to err on the side of caution and assume that it is until there is more information available.

Giardia

Giardiasis is a parasitic intestinal disease that is the most common disease of its kind to infect people in North America. It is unclear if *Giardia intestinalis* plays a role in gastrointestinal disease in horses, but horses do shed Giardia cysts in their feces, posing a potential theoretical threat of infection to humans. Giardiasis commonly causes transient diarrhea in humans, and the most likely route of transmission from horses to humans is via the fecal-oral route.

Crytosporidiosis

Crytoporidium parvum is another protozoal pathogen that has the potential to be transmitted from horses to humans. Some studies show high levels shedding of c. parvum in foals, so good hygiene should always be followed when working with horses.

Anthrax
Anthrax is caused by the bacteria *Bacillus anthracis*. This spore-forming bacterium can infect many mammals. If sudden death of a horse occurs, anthrax should be a consideration as to the cause. In the U.S., there are higher incidences of anthrax occurrences in Arkansas, South Dakota, Louisiana, Missouri, and California. A warm, dry climate tends to favor suitable conditions for infection to occur. Infection from horses to humans is not direct, but rather through the formation of spores that occurs when the vegetative form of *B. anthracis* is exposed to the air. If a horse dies, and anthrax is a possible cause, it is crucial that the body of the horse not be opened up for post-mortem examination. This will allow spore formation and spore release into the air, causing infection via inhalation, or directly through skin. The body of an animal that has the potential to have anthrax should be burned, along with all instruments and articles that were used in its treatment. The anthrax spores are very resistant to chemical disinfectants, so the best course of action is to burn any items that may pose a threat.

Leptospirosis
A bacterial disease that is considered to be the most widespread zoonosis in the world is caused by *Leptospira interrogans* and its serovars. Leptospirosis poses an occupational hazard to those involved in cattle and pork production. In horses, the most common clinical manifestations of leptospirosis is uveitis; abortion, renal disease, and stillborn foals can also occur. Diagnosis of leptospirosis in any species can be difficult, and may require many methods of testing to reach a definitive result. Leptospirosis can be transmitted between species, including horse to human exchange. This can occur through infected body fluids including urine, as well as soil and water that may be contaminated. The actual threat of transmission from horses to humans is minimal.

DISEASES INVOLVING THE SKIN

Ringworm
Most people involved in the equine industry will, at one time or another, be confronted with a skin problem in their horse. One is Dermatophytosis, better known as ringworm. This is a fungal disease of the skin. It can be transmitted through direct or indirect routes to humans. Annually, it is estimated that 2 million cases of zoonotic transmission of ringworm occur. It is important to recognize ringworm, and to handle infected animals appropriately. Direct contact with a horse that has ringworm may introduce the fungus to human skin, but it can also be contracted through contact with grooming tools or blankets used by the horse. Proper precautions should be taken to ensure that not only do other members of the herd not contract dermatophytosis, but that the people who care for the horses on a daily basis also do not develop ringworm. In immunocompetent humans, infection with these fungi is limited to the outer layers of the skin and hair. However, in immunocompromised hosts, there is mounting evidence for deep tissue, even systemic, infections. Although most cases of zoonotic ringworm in people occur through small animal (cat and dog) contact, an infected horse can infect a handler. Contact your veterinarian for information regarding ringworm treatment and control.

Dermatophilosis
Dermatophilosis, also known as “rain rot” is a common ailment in horses, with transmission between animals occurring by release of spores from the lesions when they get wet. The organism *Dermatophilus congolensis* is a bacterium. Transmission may be either direct or via insect vectors. The skin lesions appear as oozing, crusted areas in which the hairs are cemented together into characteristic *"paint-brush"* clumps. *Dermatophilus is t*ransmitted to humans by direct contact with lesions on animals. Humans develop a crusting, oozing dermatitis similar to that seen in animals. Although a chronic wet environment can set up the correct circumstances for infection and transmission, many cases have occurred without the link to “rain”.

Brucellosis

Brucellosis has a low occurrence in horses because they are relatively resistant to infection by the bacteria *Brucella abortus*. Disease can occur, however, and transmission to humans is a possibility. The contact of a skin abrasion with an infected animal or material is the typical route of infection. Again, while rare, there is always the potential for transmission, so it must be mentioned. Commonly, brucellosis infection has higher potential for those who work in direct contact with high volumes of livestock (butchers, slaughterhouse workers, and veterinarians), and

Brucellosis in animals is generally typified by late-term abortions and inflammatory lesions in the male reproductive tract. In horses, *Brucella abortus* is one cause of the bursitis conditions called *"fistulous withers"* and *"poll evil"*.

Other Zoonotic diseases that occur in both humans and horses include:

Ehrlichiosis,
Lyme Disease,
Rhodoscoccus
Systemic Fungal infections