

RISKY BUSINESS: OCCUPATIONAL HAZARDS ABOUND IN VETERINARY MEDICINE

Jenifer Chatfield, DVM, DACZM, DACVPM

Dade City, FL, USA

Veterinarians are at an increased risk of infection with zoonotic pathogens.¹ Veterinarians are at higher risk than even other occupations that have prolonged animal exposure, such as farm workers. This increased risk is likely due to several factors. Veterinarians have greater contact with sick animals and frequently manipulate uncooperative patients for procedures. In fact, veterinarians and their staff are estimated to file occupational health claims almost three times as often as human health-care workers.² When only severe accidents resulting in a loss of work time of more than three days were analyzed, the relative risk increased to 9.2. Sixty six percent of reported accidents with veterinarians are due to scratches, bites, or kicks from animals. This makes perfect sense to many of us! What would be shocking is if human physicians were more often reporting scratches and bites! Occupational disease claims are filed 2.7 times more often by veterinarians and their staff than by general practitioners and their staff; This is likely a reflection of the difference in patient populations! Occupational disease claims filed by veterinarians most often concern the skin (39%), followed by allergic respiratory diseases (30.5%), and infectious diseases (19.1%). Documented zoonotic infections in veterinary personnel include³:

- Salmonellosis
- Cryptosporidiosis
- Plague
- Sporotrichosis
- Methicillin-resistant *Staphylococcus aureus*
- Psittacosis
- Dermatophytosis
- Leptospirosis
- Bartonellosis
- Q fever

There are multiple different routes of transmission for zoonotic infections to veterinarians including direct contact, aerosol (airborne or droplet), and vector-borne transmission. Veterinarians most often contract zoonotic infections via contact (57.4%), followed by oral transmission (21.7%). It seems that experience is the best teacher of how to avoid zoonotic infections as most are acquired by young veterinarians working in primary care veterinary practice.⁴ Since veterinarians spend a significant amount of their professional education on infectious diseases, epidemiology, and zoonotic pathogens, it seems odd that so many report occupational health issues, especially zoonotic disease infections. In a large survey of practicing veterinarians, Wright, et. al., discovered that many practices do not have written infection control plans and that most US veterinarians are not aware of appropriate PPE use and do not engage in practices that may help reduce zoonotic disease transmission.⁵ So, what is the solution? Practitioners need to consider developing a written infection control plan and assuring staff adherence to the plan.

An infection control plan should address transmission prevention among patients, personal protective equipment guidance, and disinfection protocols. Preventing disease transmission among patients involves assessing signs and categorizing patients for risk.

Naturally, respiratory diseases are higher risk for transmission than skin infections or even gastrointestinal infections. Respiratory patients should be moved quickly from the lobby into an exam room if possible or examined while still in the owner's vehicle. These proactive steps rely on well-trained front desk staff.

Personal protective equipment includes everything from scrub tops and nitrile gloves to a self-contained breathing apparatus. Although staff may wish for self-contained breathing apparatus on "goat day," it seems grossly unlikely that such equipment would actually be necessary to prevent zoonotic disease transmission in a typical veterinary practice. In reality, the simple act of changing a scrub top can help prevent a large amount of diseases patient to patient. Wearing nitrile gloves routinely will help protect veterinarians and their staff. Unfortunately, many practitioners forego gloves for different reasons. Some think that wearing gloves while examining a patient with a skin infection so severe that you smelled it before you entered the exam room will offend the client. Still other clinicians think wearing gloves reflects poorly on their self-image. Both of these reasons are pale in comparison to contracting a zoonotic disease. Wear gloves! In the National Association of State and Public Health Veterinarians' model infection control plan, gloves are mentioned 24 times. This cannot be a coincidence. In addition to gloves, some practitioners advocate for shoe covers. The donning of shoe covers has actually been demonstrated to contribute to transmission of disease as most people are careless and touch the bottom of their shoes when donning or doffing the shoe covers. Thus, defeating the purpose of the shoe covers and providing ample opportunity for disease transmission. Foot baths are similarly ineffective as the disinfectant is typically not changed after each person and the shoes are not cleaned of organic material prior to stepping in the foot bath. So, the footbath simply becomes a wet and dirty pan that can serve as a source of filth and potential transmission of further disease.

As oral transmission is the second most common route of transmission of zoonotic infection to veterinary personnel, an infection control plan should describe appropriate areas for personnel to eat and drink. All personnel should avoid bringing food or drink anywhere near the area where fecal flotations are performed. Additionally, staff should be encouraged to wash their hands frequently with soap. Routine and appropriate handwashing is the most effective method to prevent disease transmission. Antibacterial soap is not necessary to effectively wash your hands and should be avoided as it affords an opportunity for development of antimicrobial resistance. While it may be tempting to skip the water and simply use an alcohol-based hand sanitizer, if hands are visibly dirty, the hand-sanitizer is unlikely to effectively remove or inactivate pathogens present.⁹ Best to simply take the 15-30 seconds to wash hands appropriately!

The clinic should also be kept clean through the day. Any fecal accidents should be cleaned up and the area disinfected as soon as possible. If suspicion of pathogen presence is high, as in a puppy with bloody diarrhea, then the previously contaminated area should be avoided with other young patients. A common error in cleaning and disinfecting protocols is the urine marking of the front desk or other areas in the lobby. Front desk staff are often unaware of the risk that urine can present for disease transmission. Urine spills should be cleaned and disinfected just as fecal spills are. At the end of each day, the entire clinic floor should be cleaned and disinfected. However, traditional mops should be avoided as they really serve to spread around contaminants rather than clean them up. The mop bucket water is typically not cleaned and replaced often enough. A common error made by most personnel when cleaning and disinfecting is not allowing the appropriate contact time for the disinfectant to work. Contact

time varies between chemicals and personnel should always adhere to label guidelines for effective use. Different products are also labeled for efficacy against specific infectious agents.

All clinics should have a protocol for isolating patients if required. The question is always, when is isolation truly necessary? And how to effectively isolate? Isolation is a tool to prevent transmission of disease. Therefore, all respiratory patients that are hospitalized should be placed in isolation. The isolation area should ideally have separate air-handling in order to effectively isolate those patients. Patients with infections that are transmitted through bodily fluids do not require isolation if properly attended to with prompt cleaning of bodily fluids and appropriate segregation from other patients where possible. For example, if leptospirosis is suspected in a patient, do not place that patient in the top-level kennel and allow the opportunity for possibly infective urine to drip down through the other kennels. Better to place such a patient in the bottom kennel.

SPECIFIC ZONOTIC PATHOGENS OF INTEREST

Many vaccine preventable diseases in pets are zoonotic. For example, leptospirosis. Leptospirosis is present world-wide, yet many veterinarians continue to withhold vaccination from dogs with a risk profile indicating vaccination. Adverse reaction rates for some leptospirosis vaccines are similar to the distemper vaccine. Rabies continues to kill roughly 60,000 people globally each year. Most of these victims are children ranging in age from 4 yr-15 yr old. More than 30,000 people receive rabies prophylaxis each year in the United States. No routinely effective treatment or cure currently exists for rabies infections. Once a person begins to show signs, the prognosis is incredibly grave. With the increasing numbers of stray, free-roaming, or feral cats being presented at veterinary practices for surgical alteration, it behooves veterinary personnel to remember that cats are three to four times more likely to be rabid than dogs. Another high-profile pathogen that veterinary personnel should be vigilant against is influenza. Prior to 2004-2005, small animal practitioners really only had to worry that clients could bring influenza into the exam room. Now, with canine influenza, veterinary practitioners need to be very concerned about transmission of influenza within their clinic among patients and to themselves and their staff members. Given the mutability of influenza, it is impossible to say when the next novel influenza might appear. In fact, recent investigations demonstrated the possibility that dogs may serve as a host to multiple influenza types simultaneously and allow for the creation of a novel influenza.^{6,7} But, take heart fellow practitioners! All of these zoonotic infections are preventable! Appropriate risk-based vaccine recommendations can help prevent patients from becoming infected with these pathogens and bringing them into the veterinary clinic.

It is not necessary for veterinary practitioners to reinvent the wheel as it relates to infection control in a veterinary practice. The National Association for State and Public Health Veterinarians has a model infection control plan available for practitioners on their website: www.nasphv.org. The plan is essentially a template available for customizing for any practice. The template also contains information and justification for each area addressed. Completing the template itself is a good first step to better understanding effective infection control in your practice. But it is not enough to simply create a plan for infection control, all clinic employees must understand the plan and work the plan. It is worthwhile to consider some type of formal training in infection control for some, if not all, clinical staff. Online training or in person training are both effective methods for training staff in infection control principles. Some good online

training is available from the CDC⁸. The training is for human healthcare settings, but the principles are the same.

In summary, it is important that veterinarians and veterinary staff recognize the enhanced risk of zoonotic infection that they face every day and take simple logical steps to protect themselves and their other patients. Develop a clinic infection control plan and make sure staff all understand the principles and protocols. Make use of appropriate personal protective equipment routine in clinic operations and encourage personnel to change scrub tops when appropriate. Remind all personnel to wash their hands well and often. Be conscientious about isolating respiratory cases and avoid mixing dogs and cats with respiratory signs. Finally, the best way to prevent zoonotic disease transmission in a clinic is to prevent those diseases in your patient population whenever possible! Encourage pet owners to comply with vaccine recommendations based on risk profiles for pathogens such as leptospirosis, rabies, and canine influenza. And, whatever you do, please, do not become patient zero!

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