

Infectious Disease

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In the recent years many new diseases have come to light which previously were not commonly found in either the United States and/or in dogs. Among these are infection with canine influenza, West Nile virus, Leishmaniasis and others. At the same time, mutations and alterations in other disease pathogens are causing increased concern and reemergence, including Leptospirosis, Tularemia and Rabies. Then there are the diseases which still are of concern despite having protective vaccination and to date are not completely controlled, including Lyme disease, Brucellosis, canine distemper and canine parvovirus. In recent years there has been a resurgence of both distemper and parvovirus in animal shelters indicating incomplete herd immunity and a need to reemphasize vaccination of these controllable diseases and a need for better surveillance and hygiene to protect dogs and in many cases humans against all of these diseases.

Biographical Profile

Dr. Christy Petersen received her BA in Biology from Johns Hopkins University, DVM from Cornell University, and PhD in immunology and infectious diseases from Harvard School of Public Health. Prior to starting her PhD, Dr. Petersen worked in small animal/exotic practice in Beverly, MA and continued to moonlight through her PhD studies. This work evolved into being the staff veterinarian for the Worcester Animal Rescue League in Worcester, MA.

Dr. Petersen received a KO8 Mentored Clinical Scientist Research Award from the National Institutes of Health (NIH). Her research focus now includes developing a program integrating molecular and advanced technology to resolving diseases important to global and public health, and teaching course work in the areas of shelter medicine, parasitology and public health. Dr. Petersen is working with Cornell University, the Centers for Disease Control and Prevention, the Walter Reed Army Institute for Research and several foxhound hunts to develop highly sensitive and specific diagnostic tests to determine Leishmania infection prior to seroconversion and an assay to determine the likelihood of a productive immune response to infection. These new technologies may lead to immunotherapy and vaccine candidates for chronic diseases including but not limited to Leishmaniasis.

Dr. Petersen is also affiliated with the Center for Food Security and Public Health, currently editing a manual for infectious disease control in animal shelters, which includes recommendations on husbandry, disinfection, vaccination and other therapies. Dr. Petersen is the faculty advisor for the Feral Cat Alliance; a student run monthly spay and neuter clinic, and the Shelter Medicine Club. Dr. Petersen is the co-major professor for the Shelter animal medicine course taught as an elective to first year ISU veterinary students each spring, giving lectures on prevention of zoonotic diseases in animal shelters and shelter design to prevent disease.

In September 2006 Dr. Petersen, along with her colleagues, authored a just-in-time document to identify zoonoses that would be of note during the aftermath to hurricane Katrina and ways to prevent the spread of these diseases during disaster recovery. Dr. Petersen spent a week doing triage and care of displaced animals after hurricanes Katrina and Rita in Louisiana at the end of

L September. Because of this work she represented the Center at the National Veterinary Animal Emergency Response team planning meeting in Baltimore and was featured in a front page, Iowa section article in the Des Moines Register. Dr. Petersen is the proud mother of one human, one Labrador, a mutt and three cats.

Dr. Petersen's research has been supported by the following grants:

799-A: Development of Sensitive and Specific Diagnostic Tests to Aid in Eradication of Leishmania Infantum from North American Foxhounds

823-E: Risk of Transmission to Humans and Possibility of Elimination of Leishmania infantum from the US Foxhound Population

Infectious Disease – conference notes

Canine infectious diseases: the good, the bad and the ugly

Recently emerging and re-emerging diseases

Canine influenza virus

Increased awareness because of risk from birds. Dogs are not the traditional carrier of the disease. Florida outbreak in 2004 was linked to thoroughbreds.

Rapid onset fever, cough, increased respiratory rate, bleeding from the nose

High infection rate

Death rate less than 5% - death due to bleeding in lungs b/c of secondary staph infection

Broad spectrum antibiotic treatment reduced severity of symptoms but did not control the spread.

West Nile Virus

Introduced to the US in 1999. Usually affects birds but also seen in humans and horses.

Disease in dogs is rare because seem to have a lower viral load. Reported cases usually fatal in dogs – less clinical – not reported?

Lethargy, not eating, drinking frequently, discharge from eyes, progressed to fever, weakness and neurological signs.

Leishmaniasis – Science News Focus, 2000

Mainly prevalent on east of the Mississippi and primarily in the foxhound population.

Ibizan hounds seem to be resistant to it. Transmission is not completely understood.

Appears not to be vector borne. Instead role for vertical transmission (mom to pup either in utero or through milk) – direct contact. Not known if foxhound has a genetic predisposition to it.

Dormant disease until another disease tests the immune system. PCR and potentially other assays used to diagnose the disease. Treatment with allopurinol, however other treatments are being tested. Prevent dog contact with hunts that have history of disease – including breeding...

Rabies – good, bad, and ugly

Canine rabies has been eliminated from the US (still have raccoon, skunk and bat varieties)

Rabies kills 55,000 people a year globally and affected 24 people in the US in 2006

Dogs quarantined in Humane Society in May 2007 because of dead bat found in a common use area tested positive.

Still only way to diagnose the disease is to do a brain necropsy.

Rabies prevention:

Still vaccinate your dogs – titers are extremely important and possibly could replace vaccines

Brucella canis

Cases in dogs on the rise in Iowa and Missouri – reportable disease b/c it can affect humans. Due to lack of treatment, affected dogs should be euthanized.

Bacterial disease spread through vaginal contact, in the womb and there are cases of it through contact with urine.

Symptoms: Abortions, infertility, lethargy loss of libido, still births and weak puppies

Tests: serology tests have a high rate of false positives.

Control

Infected male can intermittently shed in semen for up to 2 years

Should euthanize dogs, bitches can be cured but only bred via AI

Antibiotics can treat the disease; however semen will never be normal again

TEST ALL RESCUES

Fracisella tularensis-tularemia

Bacterial disease – present throughout the US

Four ticks are known carriers and can also transmit disease – main means of dog infection

Biting flies can also carry in SW US, mosquitoes carry in Eurasia

No substantial reports on antimicrobial therapy. Clavamox and gentomyacin

Leptospirosis – vaccine is available. Need to vaccinate twice a year and may not work every year.

Potentially fatal, and emergence of disease from non-traditional sources

Working dogs at greatest risk because around standing water more often because they have exposure to standing water, lakes, ponds and streams.

Treat clinical signs through IV therapy if in renal failure. Penicillin and its derivatives work. Doxycycline is also effective.

Intestinal parasites

Hookworms: eggs are passed by dogs in feces. Larva develop and penetrate human skin. Ingestion of worms leads to intestinal problems. Could also get from walking barefoot in infected and soiled areas.

Roundworms: eggs/larva persist in environment for months. Prevention – treatment of infected dogs. Routine de-worming of bitches and puppies, cleaning the environment, keeping dogs from defecating where children play.

Recent litigation toward vets – could breeders be liable as well?

** Knowledge of infectious disease and predispositions of particular breed and means of disease spread with kennel disinfections most important aspects for infection control and prevention.