

PREVALENCE OF INFECTIOUS DISEASES IN DOGS OF MAINPAT, INDIA

KC Polak,¹ JK Levy,¹ CM McManus,¹ LA Andersen,¹ CM Leutenegger,² E Dubovi,³ MR Lappin,⁴ RD Davis,⁵ M Bush,⁶ LP Mayer,⁶ TT Rinpoche⁷

¹Maddie's Shelter Medicine Program, College of Veterinary Medicine, University of Florida, Gainesville, Florida, USA; ²IDEXX Reference Laboratories, Sacramento, California, USA; ³Animal Health Diagnostic Center, College of Veterinary Medicine, Cornell University, Ithaca, New York, USA; ⁴College of Veterinary Medicine, Colorado State University, Fort Collins, Colorado, USA; ⁵Rabies Laboratory, College of Veterinary Medicine, Kansas State University, Manhattan, Kansas, USA; ⁶Senestech, Inc, Flagstaff, Arizona, USA; ⁷Yogi Tsonu Dechen Rinpoche Foundation, Miami, Florida, USA.

Free-roaming dogs in India pose serious public health and animal welfare concerns due to a lack of routine veterinary care. Dog bites affect approximately 15 million people in India annually leading to 20,000 rabies-associated deaths. Programs combining surgical sterilization and rabies vaccination have been shown to dramatically reduce both dog numbers and rabies transmission, but little is known about other infectious diseases of free-roaming dogs in India.

The objective of this study was to determine the prevalence of infectious diseases in dogs in the rural Phendeyling Tibetan Refugee Settlement of Mainpat and surrounding Indian villages in Chattisgarh state, India. Both Tibetan and Indian residents keep dogs as pets and numerous street dogs are supported by sympathetic residents. Although residents reported observing and culling dogs suspected of being rabid each year, only 5% of dog owners reported their dogs were previously vaccinated against rabies. Blood samples collected from dogs participating in a rabies vaccination program were tested by serology and PCR for a panel of infectious diseases. Dogs were considered positive for previous or current infection if either serological or molecular tests were positive.

Samples were collected from 88 pet dogs and 28 street dogs. Positive results were obtained for parvovirus (92%), distemper virus (77%), *Toxoplasma gondii* (76%), adenovirus (62%), hemotropic *Mycoplasmas* (37%), *Anaplasma sp.* (21%), *Dirofilaria immitis* (15%), *Ehrlichia sp.* (13%), *Babesia sp.* (13%), and *Leptospira interrogans* (11%). *Brucella sp.*, *Bartonella sp.*, *Borrelia burgdorferi*, and *Leishmania donovani* were not detected. There was no significant difference in the prevalence of infectious diseases in different dog populations with the exception of *Babesia sp.*, which was more common in street dogs (30%) than in pet dogs (8%) ($P=0.03$). The prevalence of virus neutralizing antibodies against rabies virus was similar in both stray (9%) and pet dogs (7%). Of 5 dogs reported to be vaccinated against rabies, only 2 had neutralizing antibodies.

Infectious diseases of both canine and zoonotic importance were common in this dog population, regardless of ownership status. Antibodies against parvovirus and distemper virus indicate widespread infection with these highly pathogenic viruses since vaccination is very uncommon. Toxoplasmosis, although common in dogs, is not a zoonotic concern unless dogs are consumed. Multiple vector-borne diseases were identified, most of which have little zoonotic potential but can cause substantial morbidity in dogs. Although the prevalence of leptospirosis was low, the potential for contamination of water sources, particularly during the monsoon season, represents a zoonotic concern. Most dogs lacked evidence for protection against rabies, even if the owner believed they were previously vaccinated. Both dog welfare and public health would be protected by implementation of a sustainable program of dog population control by neutering accompanied by vaccination and parasite control.