



**Erie County Health Department
Vector Surveillance & Control Field Laboratory
Buffalo, New York**

**Leptospirosis
2004-2007 Survey and Report**

06/2008

Overview:

Leptospirosis is a bacterial disease associated with wild and domestic animals. Many different kinds of animals carry the bacterium; while some may become sick many will have no symptoms. Leptospira organisms have been found in cattle, pigs, horses, dogs, rodents, and wild animals. The disease has a seasonal incidence during the late spring, summer and fall, when the soil is moist and alkaline. Rainfall and higher temps seem to increase the number of cases in dogs.

Animals and humans become infected through contact with water, food, or soil contaminated by urine from these infected animals. This may happen by swallowing contaminated food or water or through skin contact, especially with mucosal surfaces, such as the eyes or nose, or with broken skin. The disease is not known to be spread from person to person.

In humans it causes a wide range of symptoms, and some infected persons may have no symptoms at all. Symptoms of leptospirosis include high fever, severe headache, chills, muscle aches, and vomiting, and may include jaundice (yellow skin and eyes), red eyes, abdominal pain, diarrhea, or a rash. Many of these symptoms can be mistaken for other diseases. If the disease is not treated, the patient could develop kidney damage, meningitis (inflammation of the membrane around the brain and spinal cord), liver failure, and respiratory distress. In rare cases death occurs. The incubation period is usually 10 days with a range of 4 to 19 days. The disease is diagnosed using specific blood tests available through public health laboratories. The antibiotics of choice are penicillin, streptomycin, tetracycline and erythromycin. Kidney dialysis may be necessary in some cases.

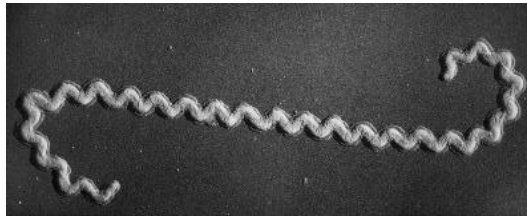
Human:

“Epidemic leptospirosis most commonly occurs after flooding in densely populated centers in developing countries. Also, experience [has shown] there is a high rate of misdiagnosis of leptospirosis” (Spichler et. al.). According to the CDC the reported incidence of leptospirosis are 100–200 cases per year in the United States with most (50–100 cases) occurring outside the continental United States in Hawaii. Leptospirosis is likely under diagnosed in the United States, with reported incidence depending largely upon clinical index of suspicion. New York State DOH reports 1 human leptospirosis case in 1994, 1996 and 1997 with 3 cases reported in 2000. More recent information is not available. None of the cases were in Erie County.

Animal:

Many articles and studies have been published in recent years indicating leptospirosis is a reemerging disease among dogs in the US and Canada. Cats are not known to be affected. In a paper that was published in Ontario, Canada, documenting a large increase of canine leptospirosis in 2000, the following was stated: “The reasons may be the increased and endemic infection of urban wildlife (notably raccoons, skunks) with leptospirosis, combined with increased numbers of

urban wildlife and an increasing index of suspicion by veterinarians, thus promoting serological testing. Although canine leptospirosis is recognized to have been increasing in Ontario in the last few years, the fall of 2000 saw a marked rise in the number of cases. A major factor was probably the wet and exceptionally warm late summer and fall, which provided conditions that were ideal for the transmission of *Leptospira* from wildlife.” (Prescott et. al.)



leptospire organism

Results of the survey of small animal veterinary hospitals conducted by the Erie County Health Department in 2004-2007:

(The survey was conducted by phone and email.)

Leptospirosis Survey: Case Results				
	2004	2005	2006	2007
Small Animal Vet Hospitals Participating	66	66	51	47
Canine Blood Samples Sent for Leptospirosis Testing	181	186	143	99
Cases Confirmed as Leptospirosis <small>(note 1 & 2)</small>	60	47	39	15
Suspected Leptospirosis Cases Unconfirmed <small>(note 3)</small>	14	20	31	19
Total Confirmed and Suspected Leptospirosis Cases	74	67	70	34

Note 1: The testing for leptospirosis was performed by seven laboratories: Cornell, Antech, Idexx, Priority, Vitatech, NYS Diagnostic and Vet Diagnostics.

Note 2: Laboratory confirmation of leptospirosis relies on indirect methods such as antibody detection. Scientific studies have demonstrated variable levels of sensitivity (30-80%) and specificity (80-90%) associated with the performance of these assays and are dependant upon stage of the infection, presence of cross-reacting antibodies, etc. Therefore, it must be assumed that a laboratory result for the diagnosis is not absolute and performance characteristics of the assay must be considered. Additionally, the diagnosis of the disease cannot rely on the laboratory result alone, but must incorporate clinical recognition, history, and other pertinent information.

Note 3: In most cases if a dog was not tested it was because of a cost issue with the owner.

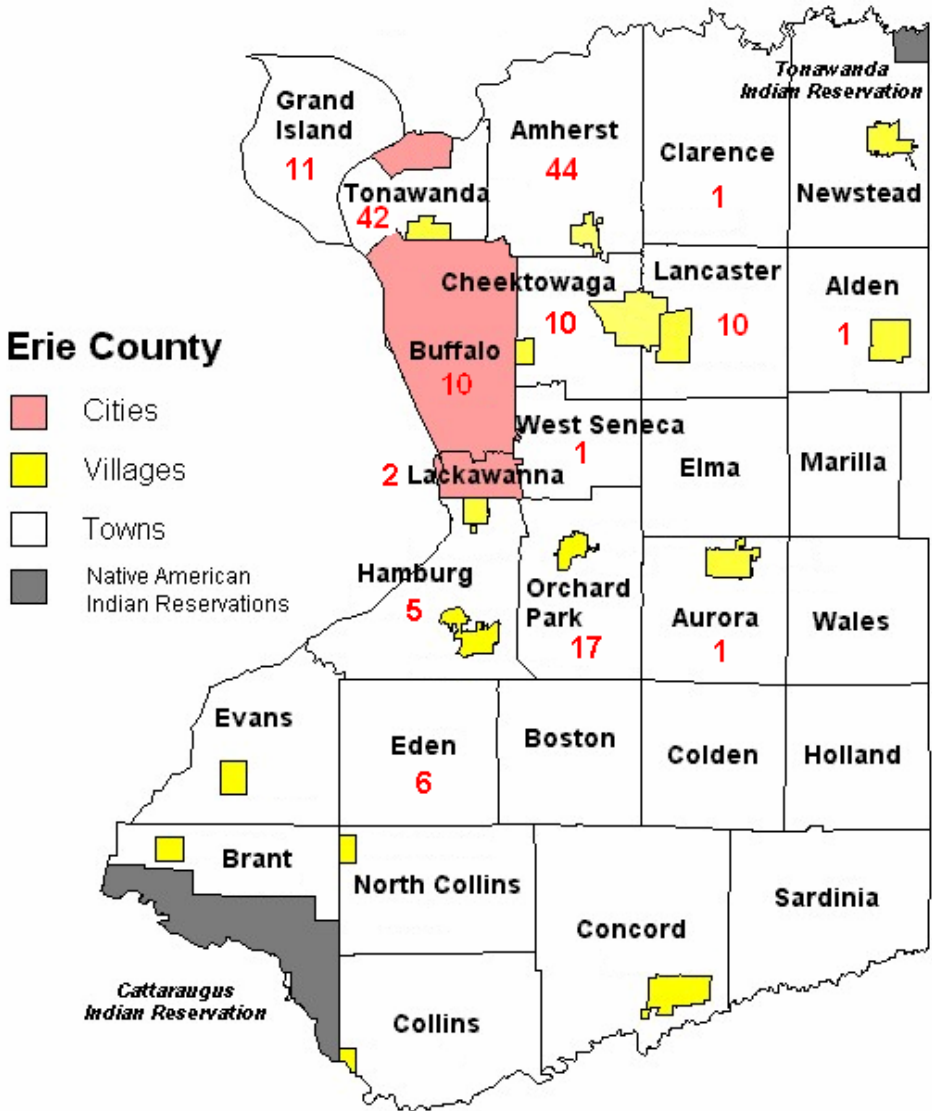
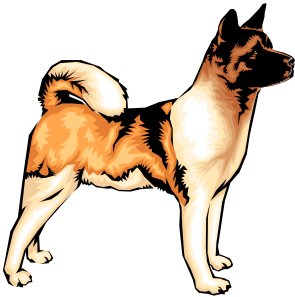
Leptospirosis Survey: Serovar Results <small>(note 4)</small>				
	2004	2005	2006	2007
Grippo Serovar	10	8	11	4
Pomona Serovar	10	7	8	2
Ictero Serovar (associated with rats)	20	27	34	9
Canicola Serovar	3	5	8	2
Bratislava Serovar (associated with rats)	18	14	17	6
Autumnalis Serovar	18	12	11	8
Other Serovars Found	2	2	2	1

Note 4: Multiple serovars can be detected in a single positive leptospirosis serum sample

Leptospirosis Survey: Veterinary Hospital Vaccination Results (note 5)				
	2004	2005	2006	2007
Hospitals That Vaccinate All Canines For Leptospirosis	33	19	20	17
Hospitals That Vaccinate On a Case By Case Basis	23	37	22	28
Hospitals That Do Not Vaccinate For Leptospirosis	10	10	9	2

Note 5: The following leptospirosis vaccines are used by Vets in Erie County: Duramune (Fort Dodge) and LeptoVax (Pfizer – Schering Plough).

Number of Laboratory Confirmed Canine Leptospirosis Cases From 2004 to 2007 by Township



Note: numbers based on locations of small animal veterinarian hospitals surveyed

Discussion:

National and local leptospirosis incidence data is not readily available due to a lack of reporting requirements. As a human illness, leptospirosis is probably under-diagnosed.

Confirmed cases of canine leptospirosis in Erie County have dropped every year of the survey. In 2004 there were 60 confirmed cases and in 2007 there were 15 confirmed cases. Changes in annual weather conditions and the number of veterinarians responding to the survey may account for some of the drop.

Another factor may be the large drop in the rat population in certain municipalities of Erie County as they employ covered garbage totes along with an aggressive rodent control program. During the years of the survey the municipalities with the highest number of rodent complaints has corresponded to the townships with highest number of canine leptospirosis cases. Evidence now indicates the drop in canine leptospirosis cases corresponds to the drop in rat populations in these same townships.

During the course of the survey there were 161 confirmed cases of leptospirosis with a total of 279 leptospirosis serovars detected. 52% of those serovars are associated with rats.

168 out of 276 leptospirosis serovars identified in the Erie County survey are included in currently available six month leptospirosis vaccines. Use of a canine leptospirosis vaccine may be indicated at least on a case-by-case basis. As canine leptospirosis appears to be more prevalent during the summer and fall in Erie County, it may be more important to protect dogs during this period.

Leptospirosis is infectious to humans; it is important for veterinary hospital personnel, Animal Control Officers, the SPCA wildlife rehabilitators and other wild animal handlers to take precautions to avoid possible infection. Wearing gloves and avoiding contact with animal urine are advisable.



For information or comment contact:

John P. Eiss john.eiss@erie.gov
Associate Public Health Sanitarian
Vector Surveillance & Control Program
Erie County Health Department

Peter Tripi peter.tripi@erie.gov
Senior Public Health Sanitarian
Vector Surveillance & Control Program
Erie County Health Department

Glenn Robert robertg@erie.gov
Senior Investigating Sanitarian
Vector Surveillance & Control Program
Erie County Health Department