County of Erie

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COUNTY EXECUTIVE

DEPARTMENT OF HEALTH

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Commissioner of Health

HEALTH UPDATE #276 **AUGUST 16, 2010**
ANNUAL LYME DISEASE AND LEPTOSPIROSIS REPORT

Please distribute to Emergency Departments, Infection Control Departments, Infectious Disease Departments, Pediatrics, Director of Nursing, Medical Director, Laboratory Director, all patient care areas, Veterinarians, Animal Control Officers, and Wildlife Rehabilitation Specialists.

Attached are two reports based on the 2009 Lyme Disease and Leptospirosis Veterinarian Survey conducted by the Vector Control Program of the Erie County Department of Health (ECDOH). The Lyme disease report also includes human statistics from the Epidemiology Program of the ECDOH as well as Tick identification data from both the New York State Department of Health (NYSDOH) and the Erie County Vector Lab. Each of these reports has epidemiologic and zoonotic importance.

Please direct any questions regarding these reports to John Eiss or Peter Tripi at the ECDOH, Vector Control Program at 716-961-7524.

Attachments:
Lyme 2006 – 2009
Leptospirosis 2004 - 2009

The ECDOH Health Alert & Advisory System is an e-mail notification system designed to alert community partners about important health related information. **You can sign up to receive alerts & advisories at www.erie.gov/health/services/health_professionals.asp.**

Health Category Definitions:

Health Alert FLASH: conveys the highest level of importance due to a large-scale, catastrophic public health emergency; warrants immediate action or attention

Health Alert Priority: conveys the highest level of importance; warrants immediate action or attention to a health problem or situation

Health Advisory: provides important information for a specific incident or situation; may not require immediate action

Health Update: provides updated information regarding an incident or situation; no immediate action necessary

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

2005 - 2009 Lyme Disease Survey

8/ 2010

Evidence continues to suggest humans and dogs can acquire Lyme disease locally in Erie County, NY.

Lyme disease is the most prevalent arthropod-borne disease in New York State, and has been endemic in the lower Hudson Valley and Long Island since at least the 1980s. Evidence suggests that Lyme disease is expanding into the Western Region of the State, including Erie County.

Lyme disease is transmitted by *Ixodes scapularis*, commonly known as the Black-Legged tick or Deer tick. The causative agent is the spirochete *Borrelia burgdorferii* and is transmitted through the bite of an infected tick.

Number of Human Lyme Disease Cases Confirmed by the NYSDOH in Erie County								
2009	2008	2007	2006	2005	2004	2003	2002	2001
10 (3)	7 (3)	7 (2)	4	11	1	1	1	4

( ) Cases reporting no travel history outside Western New York.

Eight (8) out of 24 cases from 2007 – 2009 reported no relevant travel history outside of Western, NY

The Erie County Health Department Vector Field Laboratory has provided a regional tick identification service since 2001. The ability to identify ticks and determine the degree of engorgement in a timely manner can be a valuable tool in early diagnosis and treatment of Lyme disease.

Ticks Identified in Erie County*			
Year	**Total Ticks Identified**	***Ixodes scapularis***	**% *Ixodes scapularis***
2009	323	154	47.7%
2008	265	92	34.7%
2007	184	62	33.7%
2006	164	32	19.5%
2005	76	21	27.6%
2004	49	8	16.3%
2003	84	33	39.3%
2002	103	16	15.5%
2001	49	9	18.4%
Total	**1297**	**427**	**32.9%**

*Note: Ticks were identified by the Erie County Vector Field Laboratory, NYSDOH Western Regional Entomologist and the NYSDOH Hudson Valley Community College.

With respect to Lyme disease, dogs may be considered sentinel animals because they are at greater risk of tick infestation than humans. They are compliant and easily sampled, and have a pronounced antibody response to the spirochete infectious agent. Moreover, since dogs frequently develop asymptomatic disease that can lead to lameness, their owners are often motivated to have their animals tested.

Erie County Canine Lyme Disease Survey Results				
Year	**Vets Surveyed**	**Vets That Test for Lyme**	**Canines Positive°**	**No Travel History**
2009	56	53	115	52
2008	33	25	62*****	11
2007	47	34	74	19
2006	54	35	83	23
2005	66	47	54	22
Total			**388**	**127**

°Note: Laboratory confirmation of Lyme disease 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.

*in addition there was one positive cat in 2008.

Discussion:

Evidence continues to suggest Lyme disease can be locally acquired by humans and dogs in Erie County. Lyme disease should be considered a Public Health threat in Erie County.

- In 2007, 2008 and 2009, eight (8) of the 24 confirmed human cases of Lyme disease reported no travel history outside of Western, NY.
- A large and growing number of the ticks identified in Erie County are *Ixodes scapularis* (Blacklegged deer tick), the vector of Lyme disease.
- 388 confirmed canine Lyme disease cases have occurred in Erie County over the last five years. 127 of those cases had no relevant travel history.

Last Fall the "Rabies, Disease & Vector Control Program" of the ECHD began an *Ixodes scapularis* tick capture and testing project in cooperation with the NYSDOH Laboratory. When completed the project should determine the prevalence of Lyme disease in *Ixodes scapularis* ticks in Erie County.

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

Leptospirosis
2004-2009 Survey and Report

8/2010

The use of covered garbage totes may have contributed to the drop in canine leptospirosis cases in Erie County over the past six years.

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.

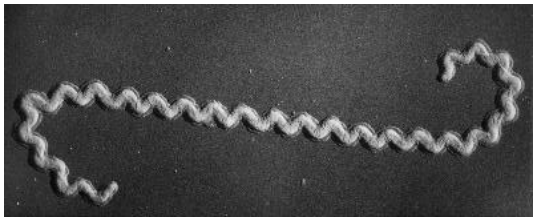
In humans, leptospirosis can cause a wide range of symptoms and some infected persons may have no symptoms at all. Symptoms include high fever, severe headache, chills, muscle aches, and vomiting, and may include jaundice (yellow skin and eyes), red eyes, abdominal pain, diarrhea, or a rash. Many of 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.)



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Results of the survey of small animal veterinary hospitals conducted by the Erie County Health Department in 2004-2009:

(The survey was conducted by phone and email.)

Leptospirosis Survey: Case Results						
	2004	**2005**	**2006**	**2007**	**2008**	**2009**
Small Animal Vet Hospitals Participating	66	66	51	47	33	53
Canine Blood Samples Sent for Leptospirosis Testing	181	186	143	99	52	99
Cases Confirmed as Leptospirosis (note 1 & 2)	60	47	39	15	7	19
Suspected Leptospirosis Cases Unconfirmed (note 3)	14	20	31	19	16	13
Total Confirmed and Suspected Leptospirosis Cases	74	67	70	34	23	32

Note 1: The testing for leptospirosis was preformed by six laboratories: Cornell, Antech, Idexx, Priority, MSU, Vitatech.

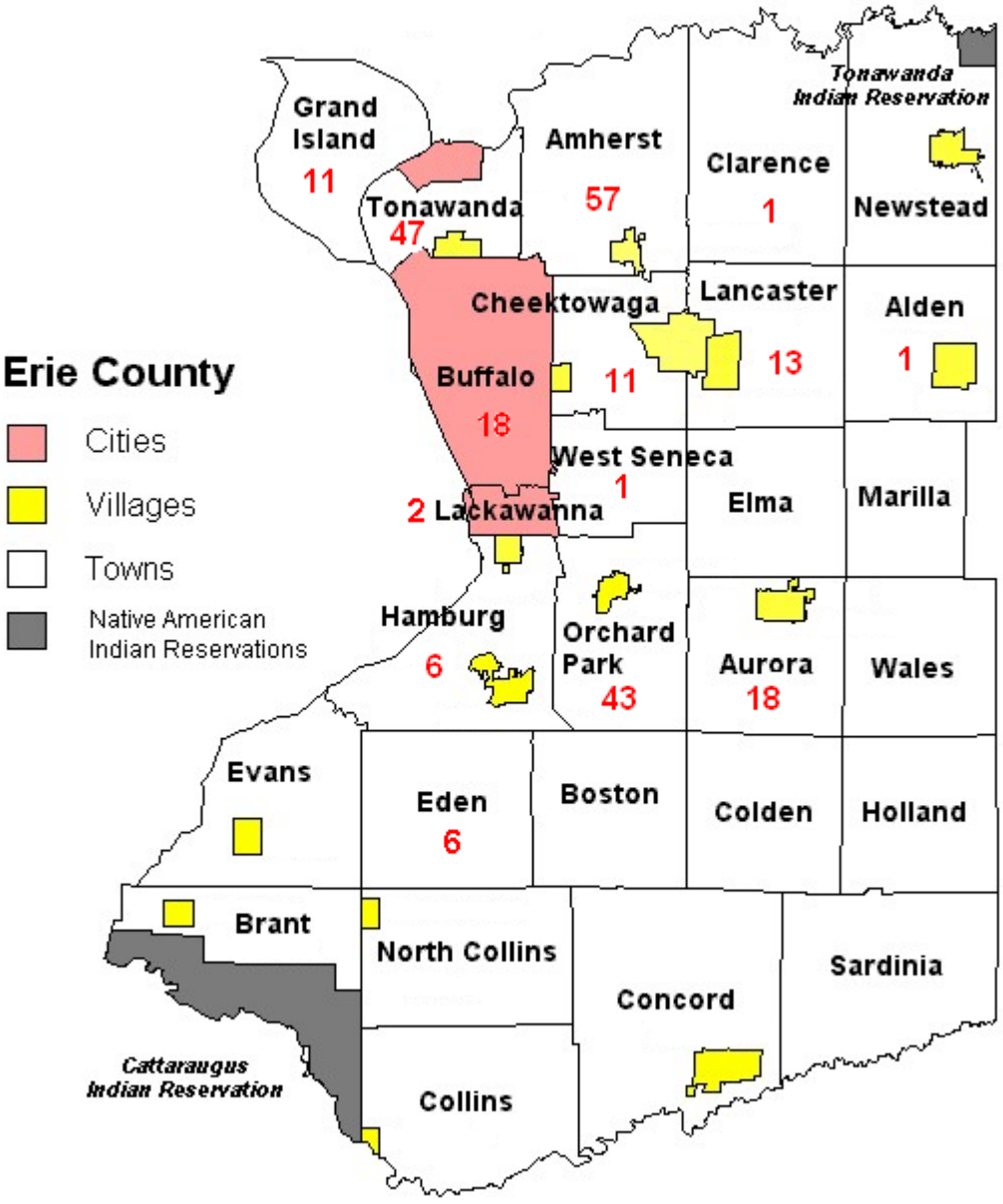
Note 2: Laboratory confirmation of leptospirosis relies on indirect methods such as antibody detection. Scientific studies have demonstrated variable levels of sensitivity (30-80%) and specificity (80-90%) associated with the performance of these assays and are dependant upon stage of the infection, 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 (note 4)							
Serovar	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**TOTAL**
Grippo	10	8	11	4	2	8	43
Pomona	10	7	8	2	1	4	32
Ictero (associated with rats)	20	27	34	9	5	6	101
Canicola	3	5	8	2	1	4	23
Bratislava (associated with rats)	18	14	17	6	1	5	61
Autumnalus	18	12	11	8	1	8	58
Other Serovars Found	2	2	2	1	1	1	9
% of Total Serovars Associated with Rats	47%	55%	56%	47%	50%	31%	49%

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

Number of Laboratory Confirmed Canine Leptospirosis Cases From 2004 to 2009 by Township



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

Leptospirosis Survey: Veterinary Hospital Vaccination Results (note 5)						
	2004	**2005**	**2006**	**2007**	**2008**	**2009**
Hospitals That Vaccinate All Canines For Leptospirosis	33	19	20	17	9	16
Hospitals That Vaccinate On a Case By Case Basis	23	37	22	28	20	30
Hospitals That Do Not Vaccinate For Leptospirosis	10	10	9	2	4	6
Hospitals Participating in The Survey	66	66	51	47	33	52

Note 5: The following leptospirosis vaccines are used by Vets in Erie County: Duramune (Fort Dodge) and Vanguard L4 (Pfizer – Schering Plough).

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 shown a general drop between 2004 and 2009. There were 60 confirmed cases in 2004 compared to 19 confirmed cases in 2009. Increased vaccination of canines, better vaccines, changes in annual weather conditions and the number of veterinarians responding to the survey may account for some of the annual 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 correspond with the townships with highest number of canine leptospirosis cases. Evidence now suggests the drop in canine leptospirosis cases may be associated to the drop in rat populations in these same townships.

During the course of the survey, there were 187 confirmed cases of leptospirosis with a total of 327 leptospirosis serovars detected. 49% of those serovars are associated with rats.

The currently available six month leptospirosis vaccines protect against 199 of the 327 leptospirosis serovars identified in the Erie County survey. 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.

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