EIRG: One Health

Zoonotic Disease Monitoring in Cook County, IL

KAREN A. TERIO DVM, PHD, DIPLOMATE ACVP

CHIEF, ZOOLOGICAL PATHOLOGY PROGRAM

CLINICAL PROFESSOR, UILLINOIS CVM

ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

Zoological Pathology Program

Division within the University of Illinois College of Veterinary Medicine Veterinary Diagnostic Lab

Based in Cook County

5 Board-Certified Veterinary Pathologists with advanced training in wildlife disease surveillance and investigations

Zoonotic Diseases

Diseases spread between animals and people

- Viruses
- Bacteria
- Parasites
- Prions

How can you get a zoonotic disease?

- Direct contact
- Indirect contact
- Vector borne
- Foodborne

Diseases of Concern

Rabies

West Nile virus

Canine distemper virus

Avian Influenza

Epizootic Hemorrhagic Disease

Leptospirosis

Salmonellosis

Tularemia

Bovine tuberculosis

Baylisascaris procyonis

Sarcoptic mange

Other parasites

Chronic Wasting Disease

REPORTABLE DISEASES

Required by the Illinois Department of Public Health

Revised 10/05/15

Cook County healthcare providers and hospitals must report any suspected or confirmed case of these diseases to the Cook County Department of Public Health (phone numbers listed below) within the number of hours or days indicated.

IMMEDIATE

Within 3 hours, Call (708) 836-8699

- Any unusual case or cluster of cases that may indicate a public health hazard (e.g. Ebola Virus Disease)
- Any suspected bioterrorist threat or event
- Anthrax
- Botulism, foodborne
- Brucellosis (if bioterrorism suspected; otherwise, 24 hours)
- Diphtheria
- Influenza A, variant
- Plague
- Poliomyelitis
- Q fever (if bioterrorism suspected; otherwise, 24 hours)
- Severe Acute Respiratory Syndrome (SARS)
- Smallpox
- Tularemia (if bioterrorism suspected; otherwise, 24 hours)

24 HOURS

Within 24 hours, Call (708) 836-8699

- Botulism (infant, wound, other)
- Brucellosis (unless bioterrorism suspected, then immediate)
- Cholera
- Enteric *Escherichia* coli infections (STEC, O157:H7, ETEC, EPEC, EIEC)
- Foodborne or waterborne infections
- *Haemophilus influenzae*, invasive
- Hantavirus pulmonary syndrome
- Hemolytic uremic syndrome, post diarrheal
- Hepatitis A
- Influenza, ICU admissions
- Measles
- Mumps
- *Neisseria meningitidis*, invasive
- Outbreaks of public health significance
- Pertussis (whooping cough)
- Q fever (unless bioterrorism suspected, then immediate)
- Rabies, (potential) human and/or animal exposure
- Rubella
- Smallpox vaccination complications
- *Staphylococcus aureus*, Methicillin resistant (MRSA) clusters (two or more laboratory-confirmed cases) in a community setting
- *Staphylococcus aureus*, Methicillin resistant (MRSA) in infants < 61 days
- *Staphylococcus aureus* infections with intermediate or high level resistance to vancomycin
- Streptococcal infections, Group A, invasive, including STSS and necrotizing fasciitis
- Tularemia (unless bioterrorism suspected, then immediate)
- Typhoid fever
- Typhus
- Varicella (chickenpox)

7 DAYS

Within 7 days, Call (708) 836-8699

STIs* (708) 836-8637

HIV/AIDS (708) 836-8675

TB (708) 836-8662

* STIs = abbreviation for *sexually transmitted infections*

- AIDS
- Anaplasmosis
- Arboviruses (e.g. West Nile Virus)
- Babesiosis
- Chancroid
- Chlamydia
- Creutzfeldt-Jakob Disease
- Cryptosporidiosis
- Cyclosporiasis
- Drug-resistant organism, extensively
- Ehrlichiosis
- Gonorrhea
- Hepatitis B
- Hepatitis C
- Hepatitis D
- Histoplasmosis
- HIV infection
- Influenza death (in persons < 18 years of age)
- Legionellosis
- Leprosy
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Ophthalmia neonatorum (gonoccocal)
- Psittacosis
- Reye syndrome
- Salmonellosis, non-typhoid
- Shigellosis
- Spotted fever rickettsioses
- *Streptococcus pneumoniae*, invasive (in persons < 5 years of age)
- Syphilis
- Tetanus
- Toxic shock syndrome due to *Staphylococcus aureus*
- Trichinosis
- Tuberculosis
- Vibriosis (non-cholera)
- Yersiniosis

For more information:
www.cookcountypublichealth.org

/ccdph @cookcohealth

Cook County DEPT. of Public Health

Promoting health. Preventing disease. Protecting you.

REPORTABLE DISEASES

Required by the Illinois Department of Public Health

Revised 10/05/15

Cook County healthcare providers and hospitals must report any suspected or confirmed case of these diseases to the Cook County Department of Public Health (phone numbers listed below) within the number of hours or days indicated.

IMMEDIATE

Within 3 hours, Call (708) 836-8699

- Any unusual case or cluster of cases that may indicate a public health hazard (e.g. Ebola Virus Disease)
- Any suspected bioterrorist threat or event
- Anthrax
- Botulism, foodborne
- Brucellosis (if bioterrorism suspected; otherwise, 24 hours)
- Diphtheria
- Influenza A, variant
- Plague
- Poliomyelitis
- Q fever (if bioterrorism suspected; otherwise, 24 hours)
- Severe Acute Respiratory Syndrome (SARS)
- Smallpox
- Tularemia (if bioterrorism suspected; otherwise, 24 hours)

24 HOURS

Within 24 hours, Call (708) 836-8699

- Botulism (infant, wound, other)
- Brucellosis (unless bioterrorism suspected, then immediate)
- Cholera
- Enteric *Escherichia* coli infections (STEC, O157:H7, ETEC, EPEC, EIEC)
- Foodborne or waterborne infections
- *Haemophilus influenzae*, invasive
- Hantavirus pulmonary syndrome
- Hemolytic uremic syndrome, post diarrheal
- Hepatitis A
- Influenza, ICU admissions
- Measles
- Mumps
- *Neisseria meningitidis*, invasive
- Outbreaks of public health significance
- Pertussis (whooping cough)
- Q fever (unless bioterrorism suspected, then immediate)
- Rabies, (potential) human and/or animal exposure
- Rubella
- Smallpox vaccination complications
- *Staphylococcus aureus*, Methicillin resistant (MRSA) clusters (two or more laboratory-confirmed cases) in a community setting
- *Staphylococcus aureus*, Methicillin resistant (MRSA) in infants < 61 days
- *Staphylococcus aureus* infections with intermediate or high level resistance to vancomycin
- Streptococcal infections, Group A, invasive, including STSS and necrotizing fasciitis
- Tularemia (unless bioterrorism suspected, then immediate)
- Typhoid fever
- Typhus
- Varicella (chickenpox)

7 DAYS

Within 7 days, Call (708) 836-8699

STIs* (708) 836-8637

HIV/AIDS (708) 836-8675

TB (708) 836-8662

* STIs = abbreviation for *sexually transmitted infections*

- AIDS
- Anaplasmosis
- Arboviruses (e.g. West Nile Virus)
- Babesiosis
- Chancroid
- Chlamydia
- Creutzfeldt-Jakob Disease
- Cryptosporidiosis
- Cyclosporiasis
- Drug-resistant organism, extensively
- Ehrlichiosis
- Gonorrhea
- Hepatitis B
- Hepatitis C
- Hepatitis D
- Histoplasmosis
- HIV infection
- Influenza death (in persons < 18 years of age)
- Legionellosis
- Leprosy
- Leptospirosis
- Listeriosis
- Lyme disease
- Malaria
- Ophthalmia neonatorum (gonoccocal)
- Psittacosis
- Reye syndrome
- Salmonellosis, non-typhoid
- Shigellosis
- Spotted fever rickettsioses
- *Streptococcus pneumoniae*, invasive (in persons < 5 years of age)
- Syphilis
- Tetanus
- Toxic shock syndrome due to *Staphylococcus aureus*
- Trichinosis
- Tuberculosis
- Vibriosis (non-cholera)
- Yersiniosis

For more information:
www.cookcountypublichealth.org

/ccdph @cookcohealth

Cook County DEPT. of Public Health

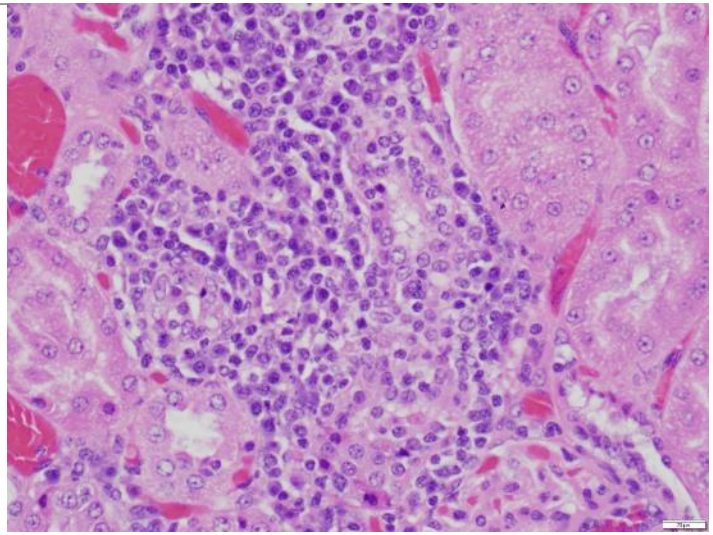
Promoting health. Preventing disease. Protecting you.

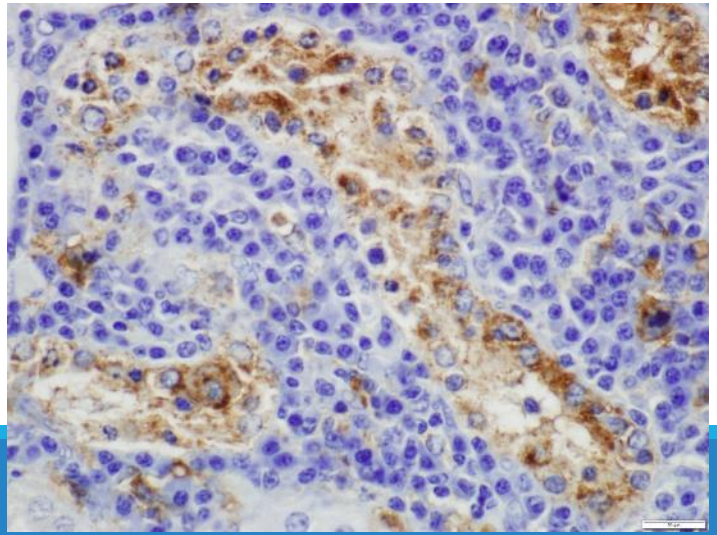
Example: Leptospirosis

Leptospira interrogans

Survives in water & soil weeks – months

- Infection directly from animals
- Infection from environment





Leptospirosis

Green Lake Pool

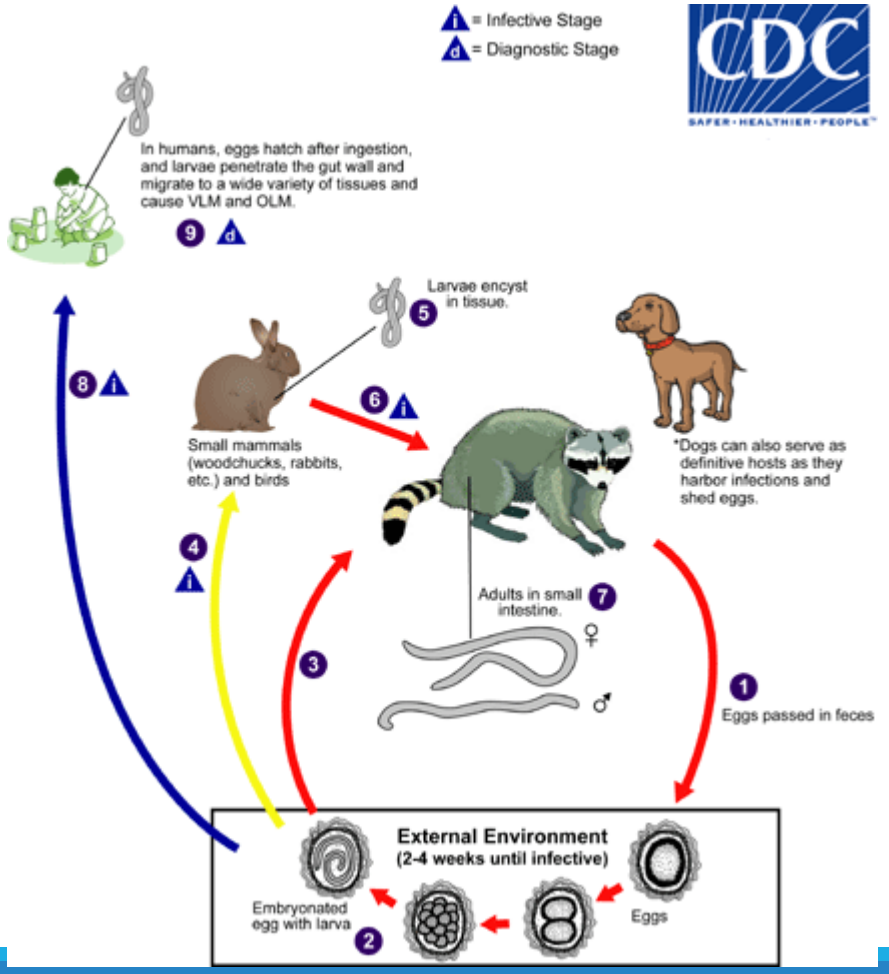
- 20% Raccoons POSITIVE in 2014
  - Grippotyphosa
  - Icterohaemorrhagiae*
    - 29% Green Lake
    - 2% county-wide
  - Hardjo

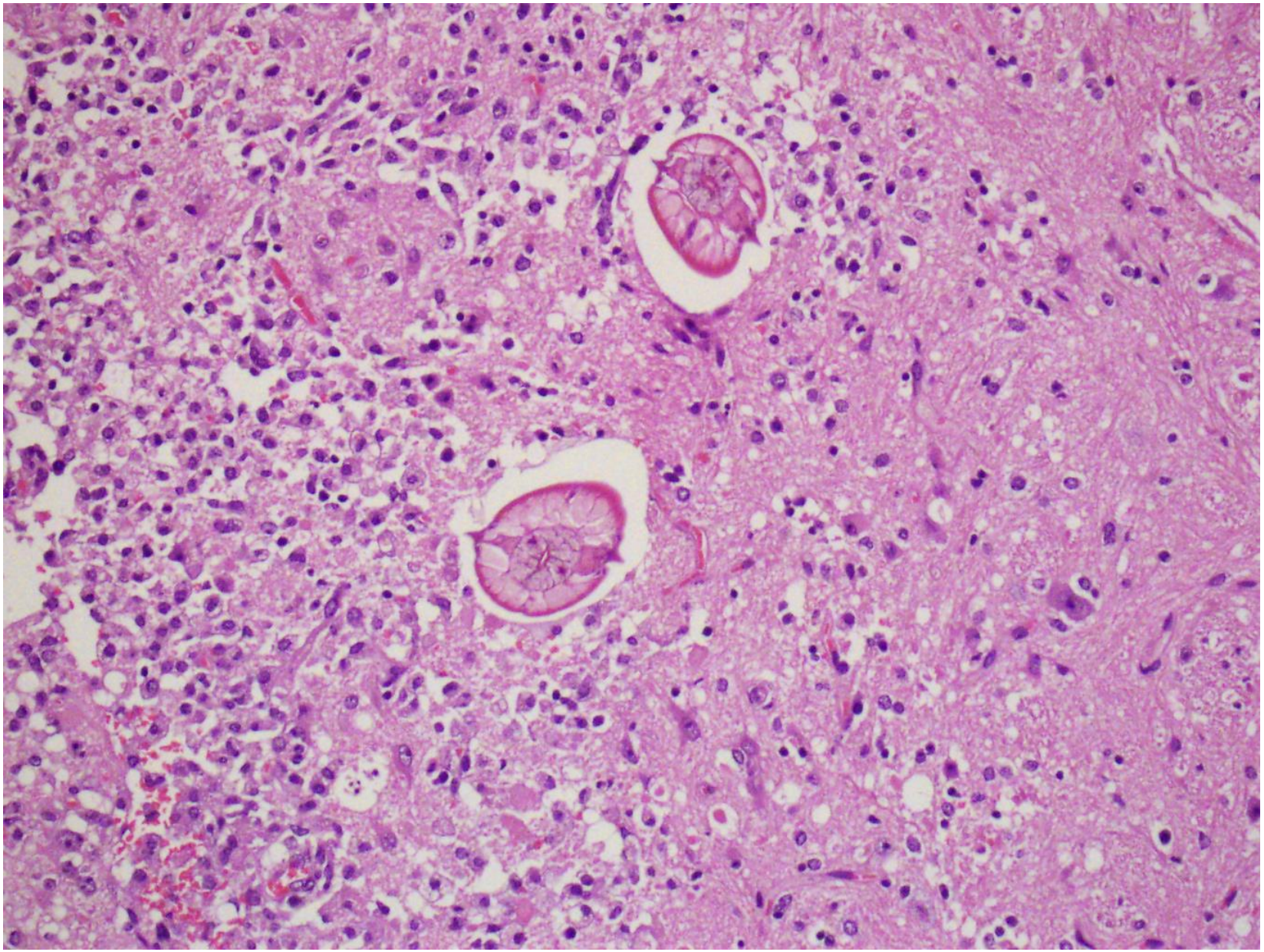
Photos: www.pioneerpest.com; www.pesthits.com; www.factzoo.com , www.arkive.com

Example: Baylisascaris

Raccoon host

High prevalence in Cook County





CDC Home | Search | Health Topics A-Z

MMWR
Weekly
January 4, 2002 / 50(51);1153-5

Raccoon Roundworm Encephalitis --- Chicago, Illinois, and Los Angeles, California, 2000

Baylisascaris procyonis (BP), a common roundworm found in the small intestine of raccoons, causes severe or fatal encephalitis (neural larva migrans [NLM]) in a variety of birds and mammals, including humans (*1--8*). BP also can cause human ocular and visceral larva migrans (*1,2,9*). Humans become infected with BP by ingesting soil or other materials (e.g., bark or wood chips) contaminated with raccoon feces containing BP eggs (*2*). Young children are at particular risk for infection as a result of behaviors such as pica and geophagia and placing potentially contaminated fingers and other objects (e.g., toys) into their mouths. This report describes two cases of BP encephalitis in residents of Chicago and Los Angeles and illustrates the importance of reducing exposure to raccoons and their feces in U.S. urban areas.

Chicago

During July 2000, a boy aged 2½ years with a history of iron deficiency anemia and pica was admitted to a Chicago hospital with a low-grade fever of 8 days duration and increasing lethargy, irritability, and ataxia during the 3 days preceding admission. A diagnosis of encephalitis was made based on the clinical presentation and laboratory findings on admission, including peripheral eosinophilia (28% of 21,000 white blood cells/mm^3), cerebrospinal fluid (CSF) eosinophilic pleocytosis (32% of 80 white blood cells/mm^3), and diffuse slow waves on an electroencephalogram. Less than 24 hours after admission, the patient lapsed into a coma with opisthotonus and decerebrate posturing; magnetic resonance imaging (MRI) revealed abnormalities in the deep white matter of both cerebellar hemispheres. Other possible causes of encephalitis (e.g., herpes simplex; arboviruses and enteroviruses; lymphocytic choriomeningitis; measles; and bacterial, fungal, and parasitic infections [e.g., toxocariasis and cysticercosis]) were excluded based on direct examination, culture, serology, and polymerase chain reaction (PCR) testing of blood and CSF. Antibodies to BP were detected in CSF and serum specimens by indirect immunofluorescence assay (IFA) (*6,8*) with titers increasing several fold and reaching high levels (1:1,024 in CSF and 1:4,096 in serum specimens) during the 4 weeks following admission. The child was treated with albendazole and corticosteroids, but his condition did not improve. After 4 weeks of
transferred to a rehabilitation center where he stayed for several months. He then was sent home where he remains profoundly neurologically disabled and in need of contin

DOI: 10.7589/2015-06-153

Journal of Wildlife Diseases, 52(2), 2016, pp. 286–292

THE STRUCTURE AND SEASONALITY OF *BAYLISASCARIS PROCYONIS* POPULATIONS IN RACCOONS (*PROCYON LOTOR*)

L. Kristen Page,[1,6] Darcie A. P. Delzell,[1] Stanley D. Gehrt,[2,3] Elise D. Harrell,[1] Mark Hiben,[1] Elizabeth Walter,[1] Chris Anchor,[4] and Kevin R. Kazacos[5]

[1] Wheaton College, 501 College Ave., Wheaton, Illinois 60187, USA
[2] The Ohio State University, 375B Kottman Hall, 2021 Coffey Road, Columbus, Ohio 43210, USA
[3] Max McGraw Wildlife Foundation, PO Box 9, West Dundee, Illinois 60118, USA
[4] Forest Preserve District of Cook County, 536 N Harlem Ave., River Forest, Illinois 60305, USA
[5] Purdue University College of Veterinary Medicine, 625 Harrison St., West Lafayette, Indiana 47907, USA
[6] Corresponding author (email: Kristen.page@wheaton.edu)

Backyard Raccoon Latrines and Risk for *Baylisascaris procyonis* Transmission to Humans

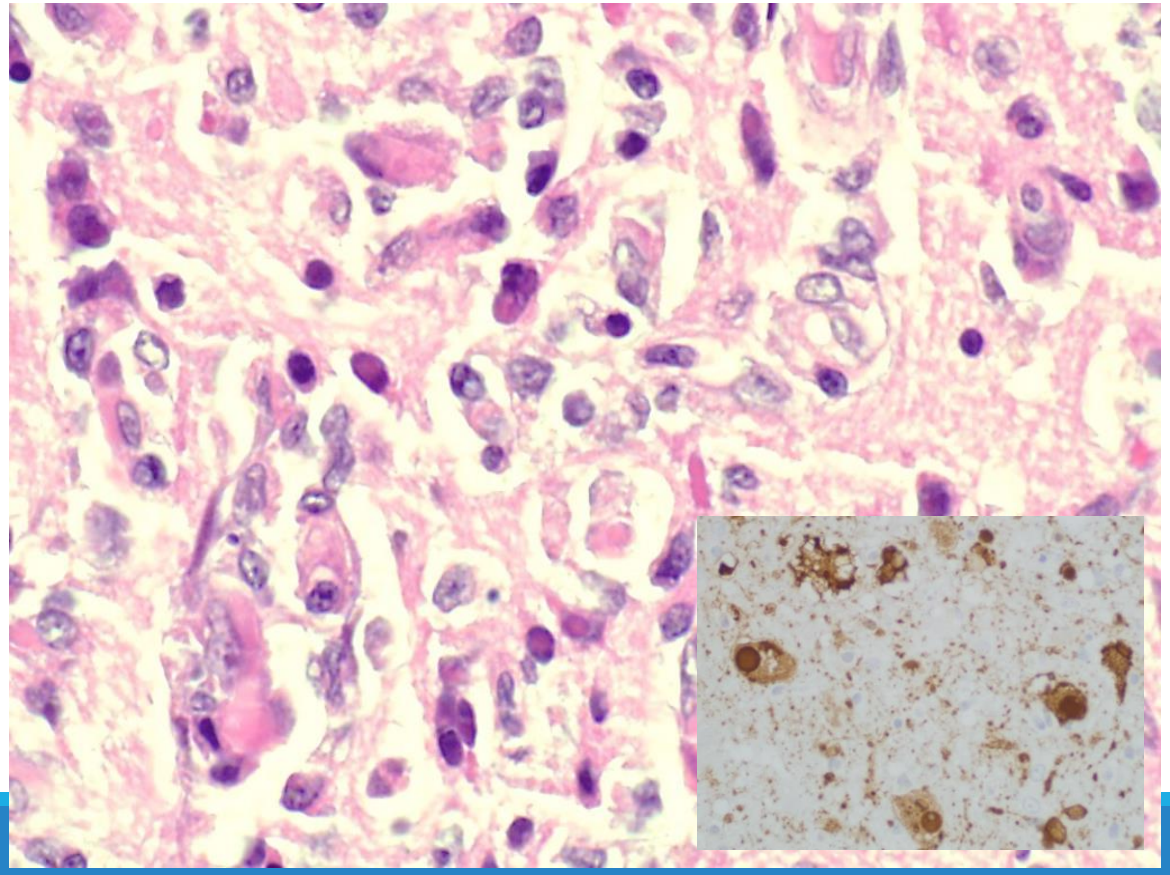
To the Editor: Raccoons (*Procyon lotor*) are abundant in urban environments and carry a variety of diseases that threaten domestic animals (*1*) and humans (*2,3*). A ubiquitous parasite of raccoons, *Baylisascaris procyonis* causes a widely recognized emerging zoonosis, baylisascariasis (*3*). Although only 14 human cases of severe *B. procyonis* encephalitis have been reported over 30 years (*4*), prevention is still a priority for public

Page County). Yards were selected on the basis of proximity to forest preserves and willingness of homeowners to participate in the study. We located latrines by systematically searching yards, giving special attention to horizontal substrates, such as piles of wood and the bases of large trees (*6*). We removed all fecal material to test for *B. procyonis* and stored it in plastic bags at –20°C until analysis. Composite samples that were at least 2 g underwent fecal flotation in Sheather solution (*7*) (at least 1 g of every fecal deposit at a latrine) (n =131). We identified *B. procyonis* eggs by microscopic examination on the basis of their size and morphologic appearance (*2*). Multiple slides were examined for ≈10% of the samples (randomly selected) to validate our results. Preva-

Example: CDV
Canine Distemper Virus

Hosts in Cook County

- Raccoons
- Skunks
- Fox
- Coyotes
- Domestic dogs



Timely Information to Citizens

wttw

home | schedule | video | programs a-z | about | support

CHICAGO TONIGHT

MAIN VIDEO ARCHIVE SPONSORS ABOUT

Politics Education Business Culture Science/Technology Health

SCIENCE/TECHNOLOGY

Dog Owners Warned of Raccoons Infected with Canine Distemper

Evan Garcia | March 18, 2016 11:39 am

An infected raccoon showing symptoms of canine distemper. (The Dallas Morning News)

PETS

COOK CO. PET OWNERS WARNED OF DISTEMPER EPIDEMIC

Share G+1 Tweet Email

EMBED </> MORE NEWS VIDEOS

Local pet owners are being warned about increases in cases of distemper and do

By Stacey Baca

PRO/AH/EDR> Canine distemper, wildlife - USA: (IL) raccoon, alert

Posted on 3/17/2016 02:40:00 PM by Pranab Chatterjee

CANINE DISTEMPER, WILDLIFE - USA: (ILLINOIS) RACCOON, ALERT

****

A ProMED-mail post

<http://www.promedmail.org>

ProMED-mail is a program of the

International Society for Infectious Diseases

<http://www.isid.org>

Date: Fri 11 Mar 2016

Source: Daily Herald [edited]

<http://www.dailyherald.com/article/20160311/news/160319706/>

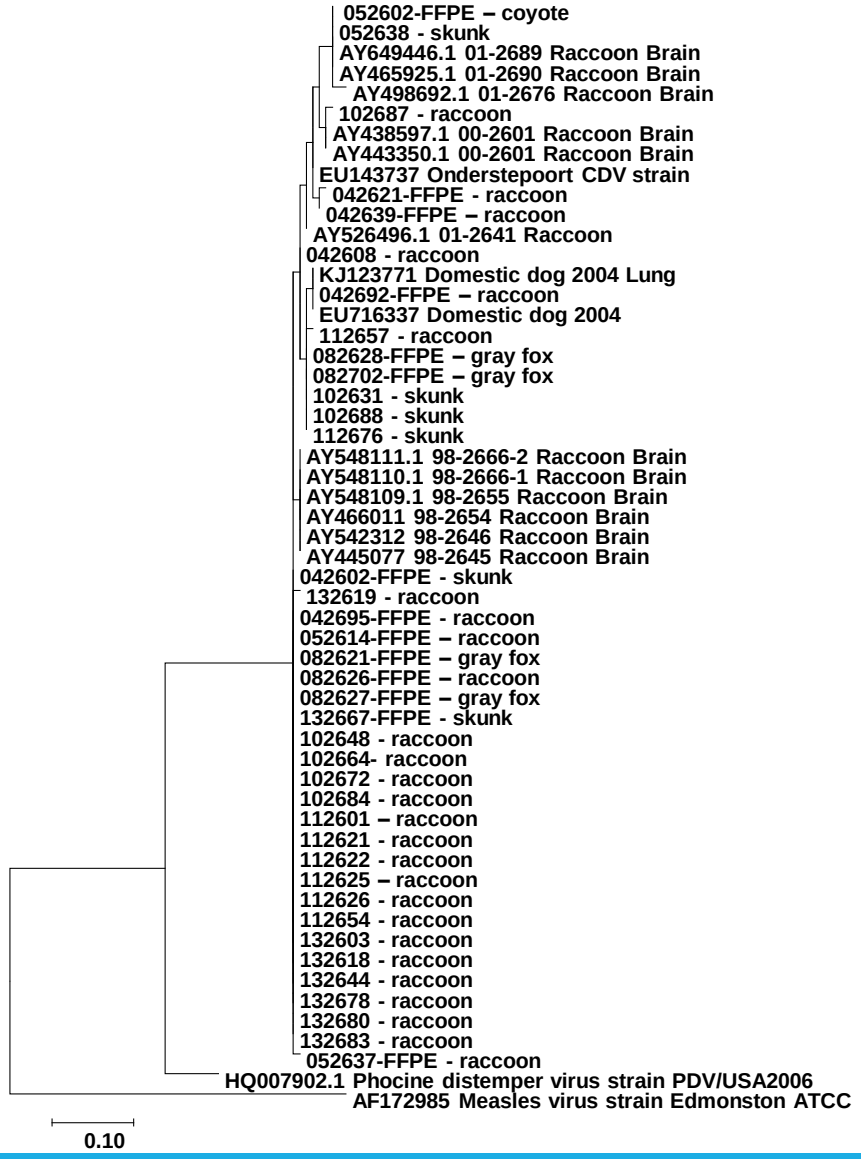
An increase in confirmed cases of canine distemper in raccoons has Cook County [Illinois] Animal and Rabies Control warning pet owners to protect their pets from the distemper virus, as well as a resurgence of canine flu.

The raccoons were tested after displaying abnormal neurological signs, said Dr. Donna Alexander, administrator of the Cook County Department of Animal and Rabies Control, in a news release Friday [11 Mar 2016].

The department's surveillance program for wildlife diseases in Cook County monitors rabies infection and other zoonotic diseases, and detects trends in diseases that can be spread to companion animals.

"This year [2016], 56 percent of raccoons that have been necropsied have been positive for the canine distemper virus," Alexander said in the release. "This exceeds the 46 percent in 2004, the last year of a distemper epidemic in pet dogs in Cook County."

Understanding the Virus



Example: CDV

EMERGING INFECTIOUS DISEASES®

Canine Distemper Outbreak in Rhesus Monkeys, China

Wei Qiu,[1] Ying Zheng,[1] Shoufeng Zhang,[1] Quanshui Fan,[1] Hua Liu, Fuqiang Zhang, Wei Wang, Guoyang Liao, and Rongliang Hu

JVI Journals.ASM.org

Lethal Canine Distemper Virus Outbreak in Cynomolgus Monkeys in Japan in 2008

Kouji Sakai,[a] Noriyo Nagata,[b] Yasushi Ami,[c] Fumio Seki,[a] Yuriko Suzaki,[c] Naoko Iwata-Yoshikawa,[b] Tadaki Suzuki,[b] Shuetsu Fukushi,[d] Tetsuya Mizutani,[d] Tomoki Yoshikawa,[d] Noriyuki Otsuki,[a] Ichiro Kurane,[d] Katsuhiro Komase,[a] Ryoji Yamaguchi,[f] Hideki Hasegawa,[b] Masayuki Saijo,[d] Makoto Takeda,[a] Shigeru Morikawa[d,e]

Department of Virology III,[a] Department of Pathology,[b] Division of Experimental Animal Research,[c] Department of Virology I,[d] Department of Veterinary Science,[e] National Institute of Infectious Diseases, Tokyo, Japan; Department of Veterinary Pathology, Faculty of Agriculture, University of Miyazaki, Miyazaki, Japan[f]

JVI Journals.ASM.org

Canine Distemper Virus Associated with a Lethal Outbreak in Monkeys Can Readily Adapt To Use Human Receptors

Kouji Sakai,[a] Tomoki Yoshikawa,[b] Fumio Seki,[a] Shuetsu Fukushi,[b] Maino Tahara,[a] Noriyo Nagata,[c] Yasushi Ami,[d] Tetsuya Mizutani,[b] Ichiro Kurane,[b] Ryoji Yamaguchi,[f] Hideki Hasegawa,[c] Masayuki Saijo,[b] Katsuhiro Komase,[a] Shigeru Morikawa,[b,e] Makoto Takeda[a]

Department of Virology 3,[a] Department of Virology 1,[b] Department of Pathology,[c] Division of Experimental Animal Research,[d] and Department of Veterinary Science,[e] National Institute of Infectious Diseases, Tokyo, Japan; Department of Veterinary Pathology, Faculty of Agriculture, University of Miyazaki, Miyazaki, Japan[f]

EIRG

Collaborative Disease Surveillance

Layering Expertise

Leveraging Resources

Improving Understanding of Wildlife Disease

- Surveillance for zoonotic diseases
- Surveillance for diseases of concern to pets
- Discovery/investigation of diseases of uncertain risk for animals & man

- Improved Public Health
- Improved Pet Health