

# Companion Animal Practice: Understanding the Veterinarian's Role in Public Health

## A One Health Perspective For Veterinarians

National Center for Emerging and Zoonotic Infectious Diseases  
Division of High Consequence Pathogens and Pathology



# Learning Objectives

- ❑ **Review zoonoses and other health risks associated with pet ownership**
- ❑ **Understand how veterinarians can contribute to public health in their daily activities**
- ❑ **Develop ways to improve communication with clients regarding health risks from pets**
- ❑ **Identify opportunities for professional collaboration between physicians and veterinarians to promote a One Health approach to further the goal of healthy pets and healthy people**

## **Presentation Outline**

- 1. Case Examples**
- 2. Zoonoses: A One Health Perspective**
- 3. Preventing Zoonoses in Pet Owners**
- 4. Client Education: Selected Zoonoses**
- 5. Opportunities for Professional Collaboration**



# CASE EXAMPLES

## Case Example: Bats and Rabies

- ❑ While you examine the teeth of a client's aging cat, he tells you a story about the bats that are living in his barn. Yesterday, he noticed one of the bats was injured and unable to fly, so he's considering bringing the bat into his home to rehabilitate it.
- ❑ What questions should you ask him?
- ❑ What preventive messages should you share with him?



See slide 26 for more information on Rabies

## Rabies Case Example (continued): Rabies Prevention



- ❑ Rabies is 100% preventable!
- ❑ The most common way for people to get rabies in the United States is through contact with a bat
- ❑ All sick dead or easily captured bats should be tested for rabies if exposure to people or pets occurs
- ❑ Advise clients:
  - Do not to handle or feed wild animals
  - Keep rabies vaccinations up to date for pet dogs, cats and ferrets

**For more information, visit the CDC Rabies web page:  
<http://www.cdc.gov/rabies/index.html>**

## Case Example: *Salmonella* and Backyard Poultry

- ❑ A client and her young daughter are waiting in an exam room. While you administer routine vaccines to their family beagle, they mention they just started a backyard flock of chickens.
- ❑ What questions should you ask them?
- ❑ What preventive messages should you share with them?



## *Salmonella* Case Example (continued):

### ***Salmonella* from live poultry is an ongoing problem:**

- ❑ **2012 Outbreaks of *Salmonella* Linked to Live Poultry**
- ❑ 8 outbreaks linked to live poultry
  - Chicks and ducklings, backyard flocks
  - Median time from purchase to illness\* = 15 days (range: 3-90)
  - Multiple serotypes of *Salmonella*: Thompson, Hadar, Montevideo, Infantis/Lille/Newport, Infantis, Muenchen, Braenderup
- ❑ 517 illnesses reported
  - Outbreak size range: 20 to 195 ill persons
  - 93 (18%) hospitalized
  - 4 deaths, unclear if infection contributed



\*information not available for all outbreaks;  
Preliminary data, subject to change

## *Salmonella* Case Example (continued):

# Trends in Recent Outbreaks Linked to Backyard Flocks

- ❑ **>70% reported contact with baby poultry (chicks, ducklings, goslings)**
- ❑ **Common reasons for purchasing poultry:**
  - Eggs
  - Pets
  - Meat
  - Other reasons, including youth projects
- ❑ **~1/3 of ill people kept poultry inside their home**
- ❑ **~1/3 of ill people reported snuggling with poultry**
- ❑ **~10% reported kissing poultry**
- ❑ **2013: Multiple outbreaks with 100s of illnesses linked to backyard flocks**
  - Current updates are available at [www.cdc.gov/zoonotic/gi](http://www.cdc.gov/zoonotic/gi)



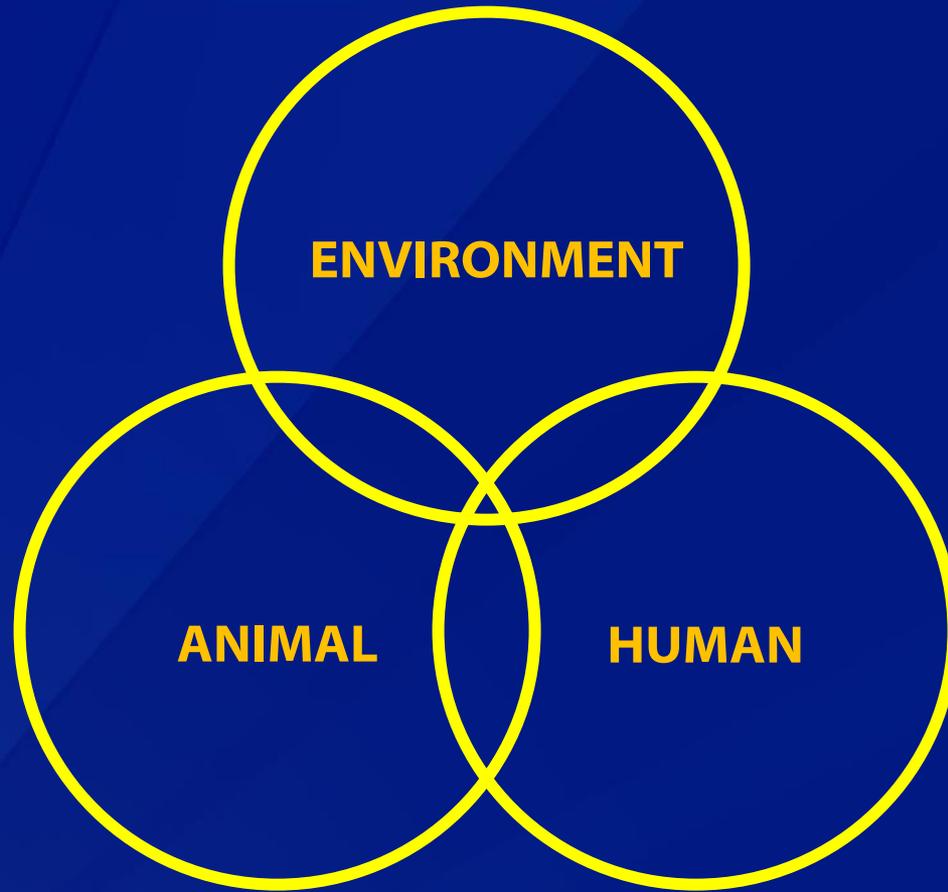
*Salmonella* Case Example (continued):  
***Salmonella* infections can be prevented!**

❑ Advise Clients:

- Wash hands with soap and water immediately after handling live poultry, or materials in their habitat
- Do not allow children to kiss poultry or to put their hands or other objects into their mouths after handling animals
- Do not eat or drink in the area where birds live or roam
- Do not let live poultry inside the house, in bathrooms or especially in areas where food or drink is prepared, served or stored, such as kitchens or outdoor patios
- Habitats and their contents should be carefully cleaned outdoors, if possible

**For more information, visit the CDC Enteric Zoonoses web page:**

**<http://www.cdc.gov/zoonotic/gi/>**



**ZOONOSES:  
A ONE HEALTH PERSPECTIVE**

# What is One Health?

**A One Health approach to protecting human health includes collaboration between human, animal and/or environmental health entities on disease surveillance, outbreak response and prevention in order to achieve an optimal human health outcome.**

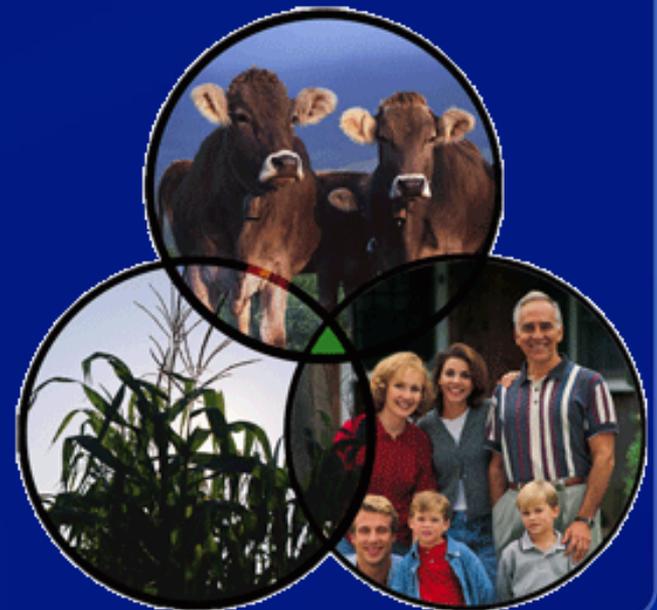


Image credit: <http://www.avma.org/onehealth/>

## **What is a zoonotic disease?**

**“Any disease or infection that is naturally transmissible from vertebrate animals to humans. Animals thus play an essential role in maintaining zoonotic infections in nature...”**

*- World Health Organization*

**“Animal diseases that are transmissible to humans.”**

*- World Organization for Animal Health*

**“Any infectious disease that can be transmitted (in some instances, by a vector) from non-human animals, both wild and domestic, to humans or from humans to non-human animals.”**

*- Wikipedia*

# Why are zoonotic diseases important?

- ❑ Of all human pathogens, 60% are zoonotic. <sup>1-4</sup>
  
- ❑ Approximately 75% of all recent emerging infectious diseases of human concern are of animal origin. <sup>1-4</sup>
  
- ❑ ~1.1 million domestically acquired *Salmonella* infections annually in USA
  - 11% caused by direct animal contact<sup>5</sup>
    - >127,000 human illnesses
    - >20,600 hospitalizations
    - 47 deaths

1. Jones, K. E., N. G. Patel, M. A. Levy, A. Storeygard, D. Balk, J. L. Gittleman and P. Daszak (2008). "Global trends in emerging infectious diseases." *Nature* 451(7181): 990-993.

2. Taylor, L. H., S. M. Latham and M. E. Woolhouse (2001). "Risk factors for human disease emergence." *Philos Trans R Soc Lond B Biol Sci* 356(1411): 983-989.

3. Woolhouse, M. and E. Gaunt (2007). "Ecological origins of novel human pathogens." *Crit Rev Microbiol* 33(4): 231-242.

4. Woolhouse, M. E. and S. Gowtage-Sequeria (2005). "Host range and emerging and reemerging pathogens." *Emerg Infect Dis* 11(12): 1842-1847.

5. Hale, C. R., E. Scallan, A. B. Cronquist, J. Dunn, K. Smith, T. Robinson, S. Lathrop, M. Tobin-D'Angelo and P. Clogher (2012). "Estimates of enteric illness attributable to contact with animals and their environments in the United States." *Clin Infect Dis* 54 Suppl 5: S472-479.

# Modes of Transmission

## ❑ Foodborne

- ❑ Consumption of animal products (meat, milk, eggs)

## ❑ Direct Contact

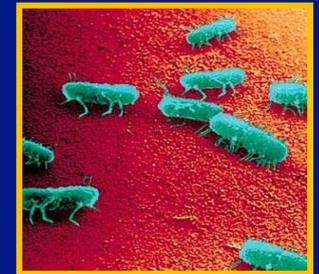
- Bites or scratches from an infected animal
- Petting or handling infected animals
  - Bodies (fur, feathers, scales) may be contaminated
  - Animals often appear healthy
  - Some animals pose a greater risk than others

## ❑ Indirect Contact

- Cross-contamination of food
- Contact with animal environments and habitats, or areas where animals live and roam

## ❑ Vector-borne

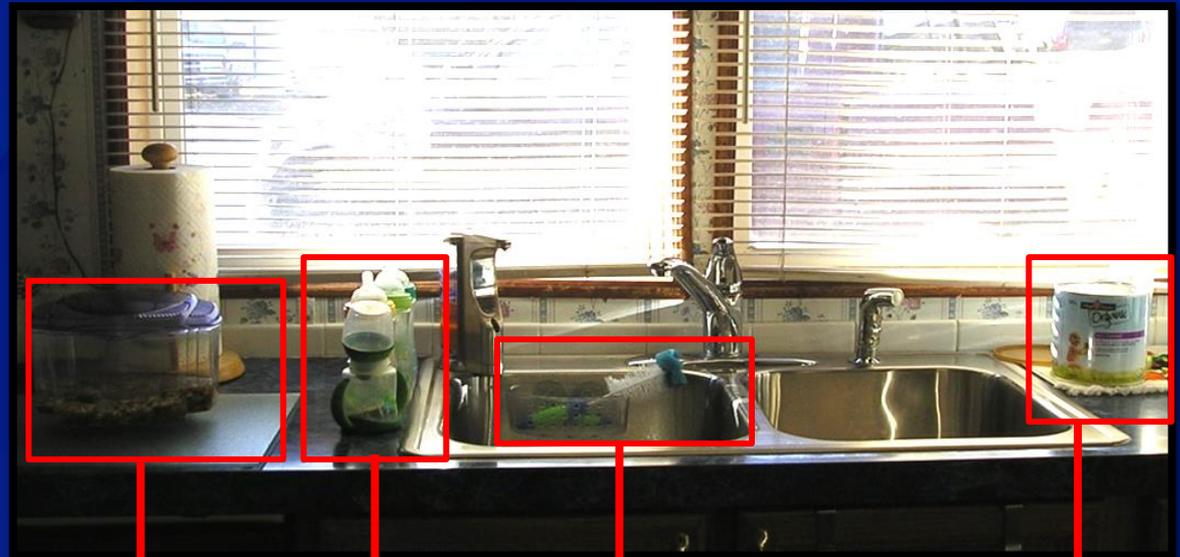
- Transmitted by mosquitoes, ticks & fleas



# People do not have to touch a pet to catch a zoonotic disease.



**Direct Contact**



**Aquarium**

**Baby Bottles**

**Bottle  
Brushes**

**Baby  
Formula**

**Indirect Contact**



# PREVENTING ZOOZOSES IN PET OWNERS

# Pet Ownership in the United States

## ❑ Companion animals play an important role in the lives of individuals and families

- 63% of pet owners consider their pets to be “part of the family”
- 39% of US households own at least one dog
- 33% of US households own at least one cat
- 1.6 million households own a reptile<sup>1</sup>

## ❑ Benefits of pet-ownership

- Companionship and emotional health
- Exercise and obesity prevention
- Service animals improve independence of those with disabilities
- Children
  - Responsibility and compassion
  - Immune system development



# Selected Zoonoses

## Parasites

- Intestinal parasites
  - *Toxocara* spp. and *Ancylostoma* spp.
  - *Giardia*
  - *Cryptosporidium*
- External parasites (fleas, ticks)
  - Exposure to Vector-borne diseases
    - Lyme, RMSF
    - Plague (*Yersinia pestis*)
    - Tularemia
- *Toxoplasma gondii*

## Skin conditions

- Ringworm (Dermatophytes)
- MRSA (Methicillin-resistant *Staphylococcus aureus*)

## Enteric pathogens

- *Salmonella* spp.
- *Escherichia coli*
- *Campylobacter*

## Other

- Rabies
- *Leptospira* spp.
- *Bartonella henselae* (Cat Scratch Disease)

For more information, visit the CDC  
Healthy Pets Healthy People webpage:

<http://www.cdc.gov/healthypets/>

# Other Health Risks



## ❑ Injuries - Trauma

- Approximately 50% of dog bites involve an animal owned by the victim's family or neighbors.<sup>1</sup>
  - Children are the most common victims of these bites, especially in the case of fatal encounters between dogs and people.

## ❑ Allergies<sup>2</sup>

- Approximately 10% of people with allergies are allergic to pets
- Up to 20% of those with asthma are allergic to pets

<sup>1</sup>Presutti RJ. 2001. Prevention and treatment of dog bites. American Family Physician. 63(8):1567-1573

Reisner IR and Shofer FS. 2008. Effects of gender and parental status on knowledge and attitudes of dog owners regarding dog aggression towards children. JAVMA. 233:1412-1419

<sup>2</sup>"The Truth about Pet Allergies." American Academy of Allergy Asthma & Immunology. (2011).

Photo Credit:<http://dallasdoglife.com/events/golden-retriever-rescue-at-woof-gang-bakery-2/>

# Daily Activities for Zoonotic Disease Prevention

## □ Routine Veterinary Care

- Vaccinations
- Routine treatment for intestinal parasites
- Flea/tick preventatives

## □ Client education

- Discuss zoonoses and other health risks
- Teach animal handling skills for children (bite prevention)
- Guide appropriate pet selection
- Counsel immuno-compromised clients on how to safely care for their animals



**Veterinarians can help mitigate health risks of pet ownership to support the human-animal bond**

# **Routine Veterinary Care: Healthy Pets = Healthier People**

## **❑ Vaccines**

- Most people are aware of the zoonotic potential of rabies, but very few understand that pets can be vaccinated for other zoonotic diseases
- Discuss leptospirosis vaccination for pets at-risk. Take the opportunity to discuss its zoonotic potential

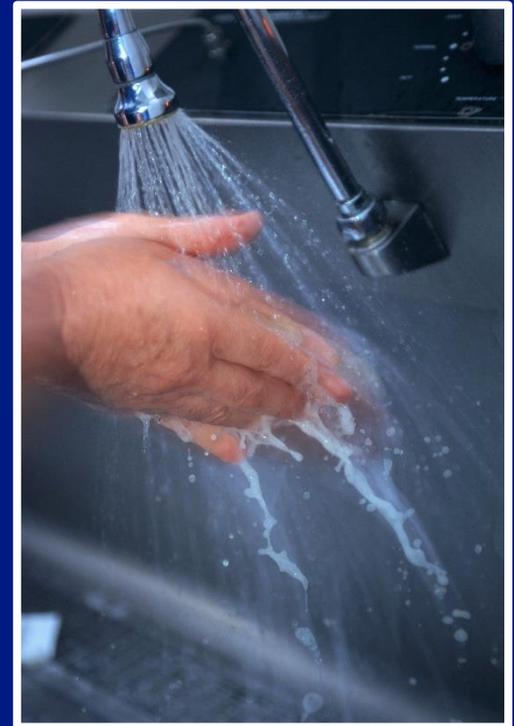
## **❑ Parasites**

- Remind clients that monthly heartworm prevention also provides treatment of intestinal parasites that can cause cutaneous or visceral larval migrans in humans (especially children)
- Remind clients that ticks and fleas brought inside by pets may carry diseases that can affect humans as well

**Clients should know how routine veterinary care  
contributes to the health of the entire family**

## General Prevention Messages

- ❑ **Wash hands with soap and water immediately after handling pets, pet foods, or materials in the pet's habitat**
- ❑ **Don't let pets lick people on the mouth**
- ❑ **Work with puppies and kittens to encourage gentle play habits**
- ❑ **Fence pets to reduce contact with stray/wild animals**



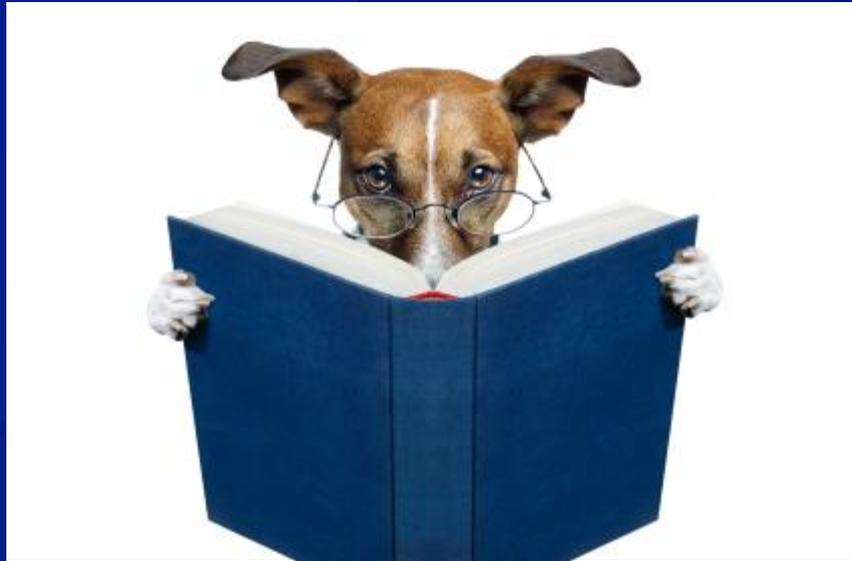
# Identify clients that may be at particular risk for disease

- ❑ General prevention messages are for everyone, but be aware of people and households who may benefit from additional information
- ❑ **High-risk Clients Include:**
  - Immunocompromised
  - Pregnant women
  - Older persons >65 years
  - Children <5 years
  - Clients with asthma or allergies

**For More Information on High-Risk Clients Visit :**  
[http://www.cdc.gov/healthypets/extra\\_risk.htm](http://www.cdc.gov/healthypets/extra_risk.htm)



**\*Note that only 3% of clients will voluntarily inform veterinarians about compromised immune status<sup>1</sup>**



## **CLIENT EDUCATION: SELECTED ZOO NOSES**

# Rabies

- ❑ Any mammal can get rabies, including dogs, cats and cattle
- ❑ **Transmission:**
  - Transmission occurs when infected saliva of a host is passed to an uninfected animal or person, most commonly through a bite.
  - The most common wild reservoirs of rabies are raccoons, skunks, bats, foxes and coyotes



# Rabies: Key Client Recommendations



- Keep your pets healthy
  - Keep vaccinations up to date for pet dogs, cats and ferrets.
  - Keep pets under your direct supervision so they do not come in contact with wild animals
  - Call your local animal control agency to remove stray animals from your neighborhood
- Avoid direct contact with unfamiliar animals
  - Do not handle or feed wild animals
  - Never bring wild animals into your home
  - Teach children never to handle unfamiliar animals
  - Prevent bats from entering living quarters

## **Rabies: Key Client Recommendations (cont'd)**

- If bitten by an animal, clients should:
  - Immediately wash bite wounds with soap and water
  - Seek medical evaluation for any animal bite
- A healthy domestic dog, cat, or ferret that bites a person should be confined and observed for 10 days. Any illness in the animal should be evaluated by a veterinarian and reported immediately to the local public health department
- Skunks, raccoons, foxes and bats that bite humans should be euthanized and tested as soon as possible
- If a bat is found in the room with a sleeping person, unattended child, mentally disabled person or intoxicated person, the bat should be trapped and submitted for rabies testing

# *Toxoplasma gondii*

## ❑ **Toxoplasmosis in Cats**

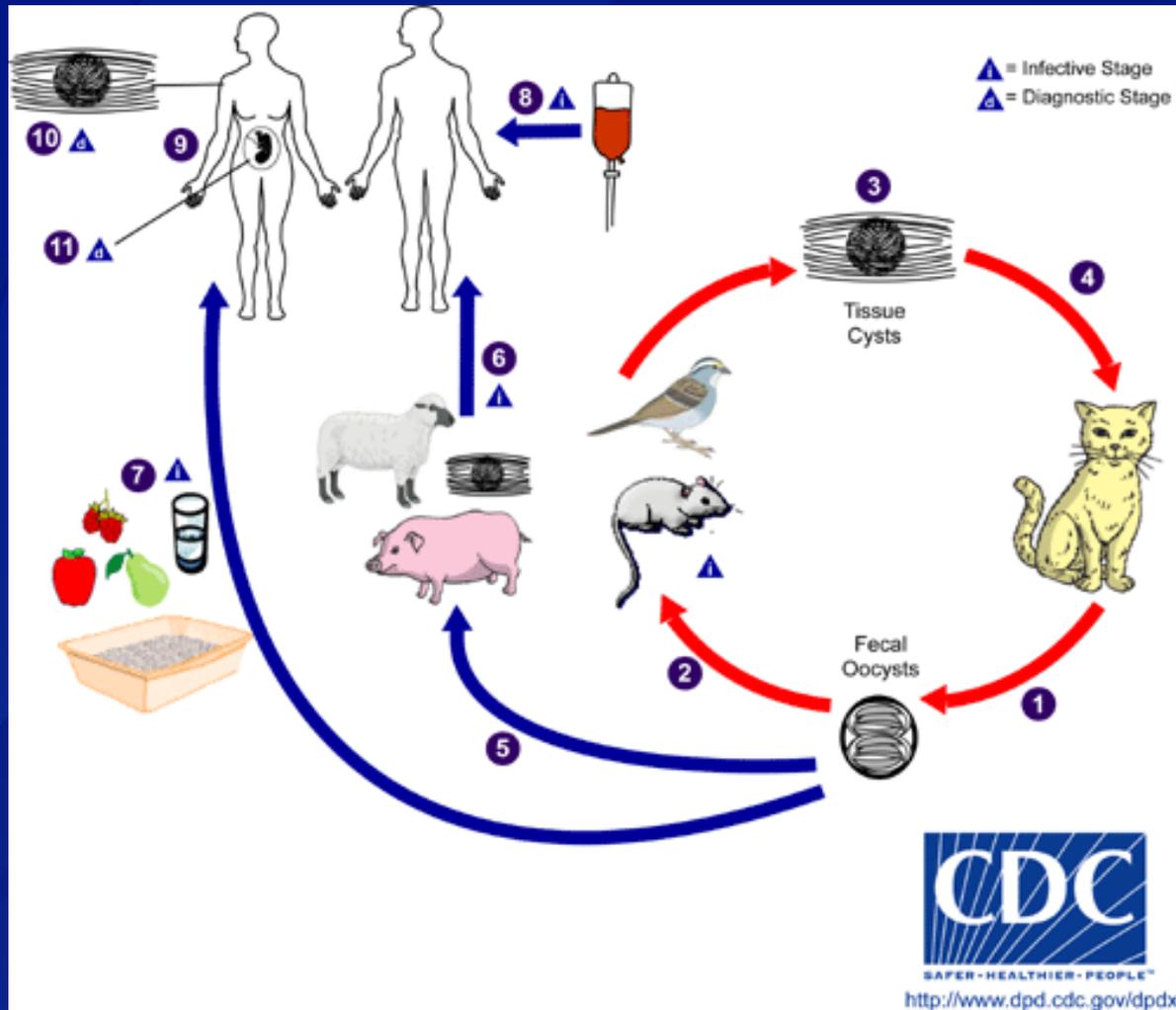
- Cats acquire *T. gondii* when they consume infected rodents, birds, or other small animals
- Cats are most likely to shed oocysts in their feces for 1-2 weeks after they are newly infected
- The majority of cats will not show clinical signs when they are infected

## ❑ **Transmission to Humans**

- *Toxoplasma* oocysts become infectious 1-5 days after they are passed in feces
- If a woman is newly infected during pregnancy, she can transmit the parasite to the fetus which can cause fetal death or severe neurologic problems in the child



# Toxoplasma Transmission



**Consuming undercooked, infected meat is also a potential route of transmission to people**

# ***Toxoplasma gondii*: Key Client Recommendations**

- Consider keeping cats indoors to prevent hunting
- Do not feed raw meat diets to cats
- Do not adopt a new kitten or cat if anyone in the house is pregnant
- Litter boxes should be cleaned by someone else in the household
  - If not possible, clean 1-2 times a day, wear gloves and wash hands immediately afterwards
- Cats like to defecate in garden areas
  - Wash garden vegetables well
  - Wear gloves when gardening
- Do not eat raw or undercooked meat
- Avoid drinking untreated drinking water

**Pregnant cat owners should not feel pressure to relinquish their pets!**



# ***Bartonella henselae* (Cat Scratch Disease)**



- ❑ ***B. henselae* is naturally transmitted among cats by cat fleas (*Ctenocephalides felis*)**
- ❑ **40% of cats carry *B. henselae* at some time in their lives**
  - The majority of infected cats are asymptomatic, subclinical carriers
  - Bacteremia is intermittent and can persist for months
  - Cats < 1 year of age are most likely to be infected
- ❑ **Transmission to Humans**
  - Transmission occurs via cat bite or scratch (contaminated by flea feces or blood from bleeding gums)
  - Although anyone can become infected, immunocompromised individuals are at greater risk

## ***Bartonella henselae* (Cat Scratch Disease)**

- ❑ **Recommendations for immunocompromised clients who own a cat or wish to adopt a new cat:**
  - Apply flea prevention monthly (even for indoor only cats)
  - Avoid rough play with cats
  - Wash all cat-associated wounds promptly
  - Do not allow cats to lick wounds or cuts
  - Adopt a visibly healthy cat > 1 year of age; preferably one with known history of consistent flea prevention

# Salmonella from Pets

❑ Poultry in backyard flocks, reptiles, amphibians, and rodents commonly carry *Salmonella*

❑ *Salmonella* bacteria are shed in droppings and can easily contaminate an animal's body (fur, feather or scales) and environment



- Salmonellae are naturally found in the gastrointestinal tract of reptiles, amphibians and other animals
- Animals that appear healthy can still shed *Salmonella*

❑ **Ask about non-traditional pets:**

- Backyard poultry flocks are becoming more common
  - Baby poultry are sold by mail-order hatcheries, feed stores and are available over the internet
- Turtles are high-risk for children
  - More likely than any other reptile to be given to a young child
  - Often displayed at daycares, school classrooms and given as prizes at carnivals
  - Terrarium water can amplify *Salmonella*
  - Small turtles (<4 inches in shell length) have been banned by the FDA since 1975

# ***Salmonella: Key Client Recommendations***

- **Keep live poultry, amphibians, and reptiles out of homes and facilities with high risk people**
- **Clean and disinfect any surfaces that have been in contact with animals**
  - Children should perform this task only under adult supervision.
- **Habitats and their contents should be carefully cleaned outdoors, if possible**
  - Do not dispose of water in sinks used for food preparation or for obtaining drinking water
  - To prevent cross-contamination, avoid washing pet food and water dishes in the kitchen sink or bathtub
  - If bathtubs must be used for these purposes, they should be thoroughly cleaned and disinfected with bleach afterward

## ***Salmonella* in Pet Food**

- ❑ **Pet food is not manufactured to be a sterile product**
  - Pet foods and treats have contents of animal origin and are at risk for *Salmonella* contamination
- ❑ **CDC recommends against feeding raw food to dogs and cats because of the risk of illness in the pet and the people in the household**
- ❑ **Dogs and cats infected with *Salmonella* may not show clinical signs**
  - *Salmonella* can be shed in feces and saliva
  - Dogs and cats can shed *Salmonella* for extended periods of time
  - Stool or vomitus can be submitted to a state or university veterinary diagnostic laboratory for *Salmonella* culturing and pulsed-field gel electrophoresis testing (PFGE)
- ❑ **If you think a patient has become ill as a result of consuming a pet food product, visit the FDA pet food reporting page:**  
<http://www.fda.gov/AnimalVeterinary/SafetyHealth/ReportaProblem/ucm182403.htm>

# ***Salmonella* in Pet Food: Client Recommendations**

- **Purchase packaged food with no visible signs of damage to the package**
- **Avoid cross-contamination of human food and environments with pet food by:**
  - Feeding pets in areas other than the kitchen
  - Washing hands immediately after handling pet food and treats
  - Avoiding use of kitchen sink and bathtub when washing pet food and water bowls
- **Keep children 5 years and younger away from areas where pets are fed to help prevent illness and injury**

## Children and Pets

❑ **Infants and children < 5 years old should avoid contact with:**

- Reptiles
- Amphibians
- Baby chicks
- Ducklings
- Pets with diarrhea



# Recommendations for Parents of Infants and Young Children



- ❑ Ensure children wash their hands thoroughly after all animal interactions
- ❑ Teach kind handling of animals and understanding of animal body language
- ❑ Do not allow children to kiss pets or to put their hands or other objects into their mouths after handling animals
- ❑ Puppies and kittens < 6 months are more likely have intestinal parasites- discuss the importance of routine deworming
- ❑ Wash hands prior to breast feeding or preparation of baby formula
- ❑ Clean animal cages, tanks etc. outside to prevent cross-contamination in the kitchen
- ❑ Children should be supervised at petting zoos to make the experience fun and safe!



# OPPORTUNITIES FOR PROFESSIONAL COLLABORATION

# Opportunities for Professional Collaboration: The Veterinarian's Role

- ❑ **Be aware of the zoonotic disease potential of your diagnosis**
  - Provide brochures or print outs that explain the zoonotic disease risk for humans
- ❑ **Be aware of high-risk client needs or concerns**
  - Ask if clients if they have any concern about their pets, or if their physician has expressed any concerns
- ❑ **Encourage consultation with physicians for follow-up**
  - Provide copies of diagnostic results and discharges to share
  - Provide a business card to pass on to physician
  - Offer to be available for consultation on animal-related issues



# Opportunities for Professional Collaboration: Direct Communication with Physicians

- ❑ Opening direct lines of communication may be beneficial for some diagnoses
- ❑ Request written permission to contact physician that includes\*:
  - the information to be discussed
  - the person(s) disclosing and receiving information
- ❑ Inform clients that they can revoke this permission at any time

**\*Always document permission, refusal and/or revocation of permission in the patient's chart.**



# Summary

- ❑ Pet ownership has many benefits
- ❑ Pets can make people sick; animals that appear healthy can still shed infectious agents
- ❑ Inform clients of the importance of vaccines and preventive care in keeping themselves and their families safe
- ❑ Veterinarians have a responsibility to provide appropriate client education to mitigate the risks of pet ownership
- ❑ Finding ways to foster relationships with physician health partners is vital for closing prevention gaps



## For more information, please contact the Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333

Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348

E-mail: [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov)

Web: <http://www.cdc.gov>

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.