

Report and Recommendations' from the
Oak Park Board of Health Commission
Regarding allowing Dogs in the Beer Shop
June 26, 2018

Background:

The Oak Park Village Board requested that the Board of Health Commission review Chapter 5-5-3 of the Village Code "Animals Prohibited in Public Buildings" as it related to food establishments." The current Village Code is based on Federal FDA (Food and Drug Administration) and State IDPH (Illinois Department of Public Health) Code that prohibits animals (with exception for service dogs, dogs used by law enforcement or military, dogs present for therapeutic purposes in long term care facilities and dogs used for onsite security purposes) to be allowed inside food establishments. Illinois State Food Sanitation Code Definition- "Food establishments" includes all food establishments includes restaurants, bars, convenience stores, food stores, bakeries etc. This also includes ready to eat foods that are prepackaged." (See Attachment 1- Laws and Ordinances).

The Oak Park Department of Public Health did receive a citizen complaint about a dog urinating on the floor of the Beer Shop. This complaint resulted in action from the Oak Park Department of Public Health. The health inspector ordered the Beer Shop to come into compliance with Village Code and not allow dogs inside of the business, which currently hold a craft beer license.

In response to the action by the Department of Health, a letter was written and submitted (See attachment 2 – Letter from Mr. Compaglia) to the Village Board by Mr. T. Compaglia, owner of the Beer Shop requested to have the Village Code amended to allow dogs in his business. Mr. Compaglia has allowed customers to bring their dogs in the Beer Shop since it opened. This was validated by a customer who gave public comment during the May 22, 2018 Board of Health Commission meeting. The information below was taken directly from the Beer Shop website.

Beer Shop (copied from beershop.com)

"What's a beer shop? Beer Shop features 16 lines of revolving beer on tap and over 250 different packaged beers. Packaged beer can be consumed at our shop or taken take home. We also serve a limited amount of cider, wine, non-alcoholic beverages, coffee and pastry (on weekends). We do not have a kitchen, but guests are encouraged to order food for delivery from our restaurant neighbors.

So what's the vibe inside? A fun, irreverent but knowledgeable staff pouring great beer that is always changing. Our customers span all ages and often are accompanied by their children, parents, and even dogs"

The Beer Shop holds a license in accordance with Village ordinance amended by the Oak Park Liquor Board and approved by the Village Board in 2015. A copy of that Amended Ordinance can be found in [attachment 3](#). This amendment license was issued to establish a D-16 liquor license classification (Craft Brew Lounge).

Specific language from that Ordinance amending Chapter 3 of the Oak Park Village Code that is relevant to the current issue is as follows:

16. Craft Brew Lounge Class D-16 Liquor License: A craft brew lounge class D-16 liquor license shall authorize the sale of craft beer for consumption off-site and consumption on-site by persons of at least 21 years of age. Class D-16 licenses shall be issued pursuant to the package requirements of the Class C and Class D-15 liquor licenses, subject to the following additional regulations and conditions:

a. The primary business of a craft brew lounge must be package craft beer sales for off-site consumption. No craft brew shall be brewed or manufactured on-site.

b. A lounge area which seats no more than 10 persons for on-site consumption shall be permitted.

c. The premises shall contain a minimum of 1,000 square feet and no more than 2,000 square feet, and the lounge area shall constitute no more than fifty percent (50%) of the floor space of the premises.

h. A licensee shall not prohibit lounge area patrons who intend to consume craft beer at the premises from providing and consuming their own food.

Agenda Item Summary:

A Motion to refer to the Board of Health a request to review Chapter 5-5-3 of the Village Code "Animals Prohibited in Public Buildings" as it relates to food establishments. The Village Code currently prohibits customers from bringing dogs into "food establishments" and it is requested that the Board of Health review this restriction and provide the Village Board with a report and recommendation in support of the ordinance as it exists or any potential amendments.

Review:

A review of the current state codes and local ordinances related to the FDA code was conducted ([attachment 4](#)). This yielded a total of 20 state and 37 cities being reviewed. All states allowed service dogs and those under the control of law enforcement to be admitted to the interior of food establishments. All states and cities reviewed did require licensing for the business (business license) and for the dog (animal license) along with specific requirements for animal vaccinations.

The laws from both state and cities reviewed did not allow dogs inside business with the exceptions noted above. There are however numerous states and cities that have specific language that allows dogs on outside patio spaces. Ordinances did address cleaning and sanitation, signage, dog contact with surfaces other than floors, employee contact with dogs, hand hygiene, requirements for admission of dogs

(vaccination and licensing requirements), control of dogs, number of dogs allowed, addressing potentially harmful situations and separate entry for dogs that did not go through the interior of the business.

Health literature with a focus on zoonotic infections was reviewed. The following statements are from the Centers for Disease Control and Prevention (cdc.gov):

“Every year, tens of thousands of Americans will get sick from diseases spread between animals and people. These are known as zoonotic diseases. Zoonotic means infectious diseases that are spread between animals and people. These diseases can cause sickness or death in people. Some animals can carry harmful germs that can be shared with people and cause illness – these are known as zoonotic diseases or zoonoses. Zoonotic diseases are caused by harmful germs like viruses, bacterial, parasites, and fungi. These germs can cause many different types of illnesses in people and animals ranging from mild to serious illness and even death. Some animals can appear healthy even when they are carrying germs that can make people sick.

Zoonotic diseases are very common, both in the United States and around the world. Scientists estimate that more than 6 out of every 10 known infectious diseases in people are spread from animals, and 3 out of every 4 new or emerging infectious diseases in people are spread from animals. Every year, tens of thousands of Americans will get sick from harmful germs spread between animals and people.”

Further review yielded limiting and sometimes even conflicting data. Although the CDC does track reported Zoonotic diseases, tracking of those transmitted by household pets is challenging as they are not as well reported as those from other animals (farm animals etc). Unless it is correctly diagnosed and reported by the health care provider, data is limited. Many people may experience mild illness that goes unreported to a health care provider, undiagnosed or untreated. The cases that are reported are usually severe and occur in those who are in at-risk groups (very young children, pregnant women, elderly and immunocompromised). A study recently published in the Journal of Nurse Practitioners about Zoonotic disease can be found in attachment 5. The article focuses on “the more common and well-known animal to human infections that are caused by direct contact with infected household pets through petting, licking, and physical injury as well as indirect contact through handling infected animal waste products”.

Conclusion:

After careful online review of state, federal and local laws/ordinances regarding dogs in food establishments, the Board of Health did not find any local, county and/or state rules, ordinance and/or laws that allowed dogs to enter “food establishments”; the only exceptions found was if the dog was a service animal, under the control of law enforcement or military or a therapeutic animal. Most states including Illinois and the City of Chicago do have language in ordinances that allow dogs on outside patio areas as long as they do not have to pass through an inside space to access the patio.

The Board of Health completed online research from the Centers of Disease and Control website, specifically zoonotic disease transmission from dogs to humans. The number of zoonotic disease incidents/outbreaks identified over the last twelve years were few and none associated as causing foodborne related human illness. Young children, pregnant women, the elderly and those who are immune compromised are more at risk of zoonotic diseases and all other communicable disease.

Based on the research conducted by the Board of Health, the Board of Health has concluded that there is a low risk to the general population of allowing dogs to enter a D16 licensed craft brew lounge. The Board of Health voted at their May 22, 2018 meeting to “submit a recommendation to the Village Board in support of an ordinance amendment which would allow dogs to enter food establishments that have been issued liquor license classification D16 craft brew lounge for consideration by the Village Board.”

The Board of Health strongly recommends that the ordinance language contain specific criteria for the following:

- a. A minimum of twice yearly inspections by the Public Health Department
- b. Specific signage that alerts potential customers to the presence of dogs
- c. Development of specific written sanitation and cleaning guidelines. These guidelines must be reviewed and signed off by the Public Health Director and posted for employee reference both in the public and non-public area of the business. This shall include handling instructions of dog urine and feces.
- d. The business must provide and document annual employee education that includes employee hand washing and routine cleaning and sanitizing procedures of the facility after being occupied by dogs.
- e. The business is to post signage stating employees are not to touch dogs.
- f. Signage stating requirements to be met before dogs are admitted, including current license, current vaccination tags, always on leash, never on any furniture, only on floor etc.

- g. Written guidelines on how employees are to manage and respond to unruly dogs and how to respond to emergencies etc. The business shall report any dog bite incidents within 24 hours to the Village.
- h. Limiting the number of dogs to one dog per adult.
- i. The Board of Health also recommends that the Village attorney investigate whether additional insurance is required of the business if allowing dogs into the business.
- j. The Board of Health recommends reviewing the licensure fees associated with the enforcement of this amendment.

Respectfully submitted by
Florence L. Miller
Chair, Oak Park Board of Health Commission

**Prohibited Animals: Village of Oak Park & State
Rules/Regulations Summary**

“Food Establishment” includes all food establishments including restaurants, bars, food stores, convenient stores, bakeries, etc. Below are the rules/regulations that reference dogs and food establishments.

Village of Oak Park Ordinance

5-5-3: ANIMALS PROHIBITED IN PUBLIC BUILDINGS AND BUSINESSES:

It shall be unlawful for any animal, even though on a leash, to be in or enter any public building, food establishment, or any business except a business for the sale or treatment of animals or business offering services or goods for animals, anywhere within the Village during the time that any of said places are open for use by the public, except for:

- A. Service animals;
- B. Dogs used by persons in the employ of recognized local, state or federal law enforcement agencies;
- C. Animals presented in animal exhibits;
- D. Animals participating in authorized animal obedience training classes; or
- E. Animals kept by the owner or operator of a business establishment. (Ord. 15-138, 8-3-2015)

Illinois State Food Service Sanitation Code/2013 FDA Food Code Adopted by Reference

6-501.115 Prohibiting Animals.

(A) Except as specified in ¶¶ (B) and (C) of this section, live animals may not be allowed on the PREMISES of a FOOD ESTABLISHMENT.

(B) Live animals may be allowed in the following situations if the contamination of FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE and SINGLE-USE ARTICLES can not result:

- (1) Edible FISH or decorative FISH in aquariums, shellfish or crustacea on ice or under refrigeration, and shellfish and crustacea in display tank systems;
- (2) Patrol dogs accompanying police or security officers in offices and dining, sales, and storage areas, and sentry dogs running loose in outside fenced areas;
- (3) In areas that are not used for FOOD preparation and that are usually open for customers, such as dining and sales areas, SERVICE ANIMALS that are controlled by the disabled EMPLOYEE or PERSON, if a health or safety HAZARD will not result from the presence or activities of the SERVICE ANIMAL;
- (4) Pets in the common dining areas of institutional care facilities such as nursing homes, assisted living facilities, group homes, or residential care facilities at times other than during meals if:
 - (a) Effective partitioning and self-closing doors separate the common dining areas from FOOD storage or FOOD preparation areas,
 - (b) Condiments, EQUIPMENT, and UTENSILS are stored in enclosed cabinets or removed from the common dining areas when pets are present, and
 - (c) Dining areas including tables, countertops, and similar surfaces are effectively cleaned before the next meal service; and
- (5) In areas that are not used for FOOD preparation, storage, sales, display, or dining, in which there are caged animals or animals that are similarly confined, such as in a variety store that sells pets or a tourist park that displays animals.

(C) Live or dead FISH bait may be stored if contamination of FOOD; clean EQUIPMENT, UTENSILS, and LINENS; and unwrapped SINGLE-SERVICE and SINGLE-USE ARTICLES cannot result.

Article 24 Foods and Food Establishments section 8-24-2: GENERAL PROVISIONS M. Sanitation Requirements For Food Establishments:

The sanitation requirements for food establishments shall be regulated in accordance with the terms of the 1975 edition of the Illinois department of public health, "Food Service Sanitation Rules And Regulations Pertaining To The Sanitation Of Food Service Establishments"; and the terms of the 1968 Illinois department of public health "Rules And Regulations For Retail Food Stores", and as may from time to time thereunder be amended, three (3) copies of which are and shall remain on file in the office of the Village Clerk; provided, that the following additions to the Illinois department of public health rules and regulations shall have precedence.

2013 FDA Food Code: Annex 3 – Public Health Reasons/Administrative Guidelines 536

6-501.115 Prohibiting Animals.

Animals carry disease-causing organisms and can transmit pathogens to humans through direct and/or indirect contamination of food and food-contact surfaces. The restrictions apply to live animals with limited access allowed only in specific situations and under controlled conditions and to the storage of live and dead fish bait. Employees with service animals are required under § 2-301.14 to wash their hands after each contact with animals to remove bacteria and soil.

Animals shed hair continuously and may deposit liquid or fecal waste, creating the need for vigilance and more frequent and rigorous cleaning efforts.

The definition for "service animal" is adapted from 28 CFR 36.104 adopted pursuant to the Americans with Disabilities Act (ADA) of 1990 (42 U.S.C. 12101 et seq.). A service animal performs some of the functions that persons with a disability cannot perform for themselves, such as those provided by "seeing eye dogs"; alerting persons with hearing impairments to sounds; pulling wheelchairs or carrying and picking up things for persons with mobility impairments; and assisting persons with mobility impairments with balance. A service animal is not considered to be a pet.

Under Title III of the ADA, privately owned businesses that serve the public are prohibited from discriminating against individuals with disabilities. The ADA requires these businesses to allow people with disabilities to bring their service animals onto business premises in whatever areas customers are generally allowed. Some, but not all, service animals wear special collars or harnesses. Some, but not all, are licensed or certified and have identification papers.

Decisions regarding a food employee or applicant with a disability who needs to use a service animal should be made on a case-by-case basis. An employer must comply with health and safety requirements, but is obligated to consider whether there is a reasonable accommodation that can be made. Guidance is available from the U.S. Department of Justice, Civil Rights Division, Disability Rights Section or the U.S. Equal Employment Opportunity Commission, the Federal agency which has the lead in these matters, in documents such as, "Commonly Asked Questions About Service Animals in Places of Business"; "The Americans with Disabilities Act Questions and Answers"; "A Guide to Disability Rights Laws"; and "Americans with Disabilities Act Title III Technical Assistance 1994 Supplement." The ADA Information Line is 800-514-0301 (voice) or 800-514-0383 (TDD) and the Internet Home Page address is <http://adata.org/>.

Mike Charley, Public Health Director
mcharley@oak-park.us
708-358-5482

Proposal to Allow Leashed Dogs at BeerShop

To: Oak Park Village Board

From: BeerShop 1026 N Blvd, Oak Park, IL 60301

Item: Request that the Village ordinance prohibition on dogs entering food establishments be amended.

Summary: BeerShop is a three-year-old establishment in downtown Oak Park. BeerShop's business is classified by Oak Park as a Craft Beer Lounge (Article 3, Section 3.1). As such, it does not serve food or have a kitchen. During our time in business, many customers have grown accustomed to bringing their dog into our establishments with the belief that our non-kitchen status allows them to do so. This belief is based on similar, non-food beer centric establishments in Chicago. These businesses allow customers to bring leashed dogs into their taprooms. Chicago's restrictions regarding animals in stores are based only on food establishments:

Chicago's Municipal Code Title 7, chapter 40 Food establishments:

7-40-060 Animals in stores.

*It shall be unlawful for the owner of, or the person having the care or custody of any animal, to suffer or permit such animal to enter any store, meat market, bakery or other place **where foodstuffs are sold or on display**; provided, that the person owning or operating such store or place may permit a watchdog to remain therein if chained or bound in such a way that the dog cannot come in contact with any of the foodstuffs; provided, further, that when a blind person is accompanied by a dog which serves as a guide or leader for him, neither the blind person nor the dog shall be denied the right of entry and use of the facilities, if such dog is wearing a harness and the person presents credentials for inspection issued by a school for training guide dogs approved by the United States Veterans Administration. Any person violating any of the provisions of this section shall be fined not less than \$10.00 nor more than \$25.00 for each offense. (Amend Coun. J. 12-9-92, p. 25465; Amend Coun. J. 6-10-96, p. 23652; Amend Coun. J. 11-8-12, p. 38872, § 147)*

As a Craft Beer Lounge, BeerShop does not serve food. However, BeerShop is currently under the same restrictions with respects to customer's dogs as food establishments. These Oak Park restrictions are to be found in Section 5-5-3 and 8-24-2 and prohibit dogs in any food establishment. Moreover, these sections do not make exceptions for non-food serving establishment such as BeerShop.

Request: Repeat customers make up 60% of BeerShop's business. Many of our customers are local to the Oak Park area and like to walk their dog while going to BeerShop. Therefore in an attempt to accommodate these dog-owning customers, we are requesting an amendment to Oak Park's Ordinances that would recognize BeerShop's unique status as a non-food establishment so that leashed dogs could be

allowed under certain conditions. These conditions might include similar restrictions found in outdoor restaurant areas in Chicago where dogs are allowed:

4-8-031 Retail food establishment – Dog-friendly areas.

(d) If a retail food licensee allows patrons of the establishment to bring dogs on any portion of the retail food establishment, other than a service dog assisting a handicapped person, the following requirements shall apply:

- (1) dogs shall only be permitted in dog- friendly areas;*
- (2) dogs shall not be permitted to be in or travel through any indoor portion of the retail food establishment, or in any area where food is prepared;*
- (3) any dog not kept on a leash at all times or not kept under control by its owner shall be immediately removed from the retail food establishment's premises. The licensee shall have the right to refuse to serve the owner of any dog if the owner fails to keep the dog on a leash, or to exercise reasonable control over the dog, or the dog is otherwise behaving in a manner that compromises or threatens to compromise the health or safety of any person present in the retail food establishment;*
- (4) only dogs bearing a current rabies vaccination tag or other proof of current rabies vaccinations shall be permitted in the dog-friendly areas;*
- (5) a sign shall be posted in a conspicuous place in the retail food establishment indicating whether the retail food establishment permits dogs. The size and language on the sign shall be as set forth in the rules and regulations;*
- (6) the dog-friendly area, including all furniture, fixtures, and walking surfaces, shall be made of hard surfaces that can be washed with soap and water, hosed down and sanitized;*
- (7) the table and chairs at which patrons with dogs are seated shall be cleaned and sanitized between seating of patrons;*
- (8) in the event any patron's dog bites or attacks a person while on the retail food establishment's premises, the licensee shall immediately notify 311;*
- (9) while on the retail food establishment's premises, a dog shall not be provided food, either by the employees or by patrons; provided that a dog may be provided water;*
- (10) dogs shall not have any contact with any food, food contact surfaces, serving dishes, utensils, tableware, linens, paper products or any other food serving products; and*
- (11) the retail food establishment's employees shall not have contact with the dogs. If any employee has contact with a dog or a surface touched by a dog, the employee shall immediately wash his/her hands before continuing with any food service*

Please let me know if you need any further information in order to consider our request.
Thank you for your time and consideration in this matter.

Sincerely,

Tony Compaglia
Owner of BeerShop

ATTACHMENT #3

four (4) ounces each. Glassware that is larger than a defined serving size must have a pour line to indicate serving size.

- c. It shall be unlawful for the holder of a Class D-15 license to provide a sample of or sell any craft beer before the hours of eleven o'clock (11:00) A.M. or after the hour of twelve o'clock (12:00) midnight.
- d. All applicable taxes including Sales Tax shall be collected and paid on all revenue realized from the retail sale of craft beer.
- e. Class D-15 licensees must have at least one BASSET certified site manager on premises whenever beer is available for on site consumption. Class D-15 licensees must provide packaged food service whenever beer is available for on site consumption.
- f. Class D-15 licensees must have a valid State of Illinois Class 3 brewer's liquor license and State of Illinois Class 10 craft brewer's liquor license, or equivalent State of Illinois liquor licenses and comply with any and all applicable Federal, State, and local laws and regulations, including, but not limited to, procurement of a requisite Federal brewer's notice and any and all other requisite licenses and permits concerning manufacture, packaging, storing, sale, and distribution of alcoholic beverages.
- g. Every employee of a Class D-15 licensee who participates in the production and sale of craft beer must be BASSET certified.
- h. The location of the retail sale and consumption of craft beer shall be limited to the retail portion of the licensed premises, except during supervised tours and private parties located in the manufacturing area.
- i. The portion of the licensed premises dedicated to the retail sale of craft beer shall be segregated from the remainder of the premises.
- j. Not more than twenty five percent (25%) of the total gross square footage area of the physical premises shall be designated to the retail sale of craft beer.
- k. A licensee shall maintain accurate records as to the total gallons of beer manufactured on the premises and the total gallons of beer manufactured on the premises and sold for consumption off premises. Licensee shall produce said records to the Village upon request.
- l. The annual fee for a Class D-15 license shall be two thousand five hundred dollars (\$2,500.00). (Ord. 16-102, 9-6-2016)

16. Craft Brew Lounge Class D-16 Liquor License: A craft brew lounge Class D-16 liquor license shall authorize the sale of craft beer for consumption off site and craft beer and wine for consumption on site by persons of at least twenty one (21) years of age. Class D-16 licenses shall be issued pursuant to the package requirements of the Class C and Class D-15 liquor licenses, subject to the following additional regulations and conditions:

- a. The business of a craft brew lounge must include package craft beer sales for off site consumption. No craft beer shall be brewed or manufactured on site.**
- b. A lounge area which seats no more than ten (10) persons for on site consumption shall be**

permitted.

- c. The premises shall contain a minimum of one thousand (1,000) square feet and no more than two thousand (2,000) square feet, and the lounge area shall constitute no more than fifty percent (50%) of the floor space of the premises.
- d. On site consumption allowed in the lounge area of craft beer shall be in containers no less than six (6) ounces and no larger than sixteen (16) ounces. The sale of beer in growlers is prohibited.
- e. Authorized hours of business shall be six o'clock (6:00) A.M. to eleven o'clock (11:00) P.M. Sunday through Wednesday and six o'clock (6:00) A.M. to twelve o'clock (12:00) midnight Thursday through Saturday. Service of craft beer and wine for consumption on the premises and the sale of package craft beer shall be permitted beginning at eleven o'clock (11:00) A.M. Monday through Friday and nine o'clock (9:00) A.M. Saturday and Sunday through the closing hours set forth above.
- f. All staff who participates in the packaged sale of craft beer or on site serving of craft beer and wine must be BASSET trained and certified.
- g. No person under the age of twenty one (21) years shall be on the premises without the supervision of a parent or legal guardian twenty one (21) years of age or older. Signage shall be posted at the entrance of the premises to reflect this requirement.
- h. A licensee shall not prohibit lounge area patrons who intend to consume craft beer or wine at the premises from providing and consuming their own food. (Ord. 16-060, 5-16-2016)
- i. The annual fee for a Class D-16 license shall be two thousand five hundred dollars (\$2,500.00). (Ord. 17-313, 11-20-2017, eff. 1-1-2018)

E. Special Events Liquor Licenses:

1. Special Events Class E-1 Liquor License: Special events Class E-1 liquor licenses shall authorize the sale of alcoholic liquor for consumption on the premises owned or leased by nonprofit organizations and occupied by the licensee only during ten (10) special events per year. Such Class E-1 liquor licenses may also authorize two (2) of the ten (10) special events per year to be the sale at auction of alcoholic liquor in the original package, not for consumption on the premises where sold and subject to the restrictions as set forth below:
 - a. No person under twenty one (21) years of age will be allowed to purchase packaged alcoholic liquor or to sell it at auction.
 - b. No more than fifteen percent (15%) of the auction sales receipts for all auctions held under one auction liquor license in any calendar year may be derived from the sale of packaged alcoholic liquor. Each auctioneer must retain receipts of all sales at auction for a period of two (2) years. All receipts shall be compiled in a record which shall indicate the total sales receipts for each auction and the total sales receipts for each year. The auctioneer shall also maintain these records for two (2) years and shall allow the Village access to such records for review during normal business hours. The percentage of auction sale receipts

Most recent estimates in the United States suggest that there are 72 million pet dogs kept by 37% of households (https://wwwnc.cdc.gov/eid/article/18/12/12-0664_article). This number can vary widely depending on your source, but they all agree - we have a lot of dogs.

In the past 12 years, from a selected list (<https://www.cdc.gov/healthypets/outbreaks.html>) - there have been 3 “dog-related” outbreaks reported by the CDC, and 2 of them were due to contaminated dog food, not from dogs themselves. The other was an outbreak of *Campylobacter* from contact with puppies from Petland stores (113 cases in 17 states, 25 were Petland workers).

It is likely that pet-related outbreaks are underreported since the proportion of human disease attributable to pets is unknown, and any reported frequency of such infections is likely underestimated (<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4500695/>).

Zoonotic Diseases

From the CDC – <https://www.cdc.gov/healthypets/pets/dogs.html#tips>

Although germs from dogs rarely spread to people, they might cause a variety of illnesses, ranging from minor skin infections to serious disease. To protect yourself and your family from getting sick:

- Seek routine veterinary care for your pet and
- Always [wash your hands](#) and the hands of children with running water and soap after contact with dogs, their stool, and their food.

By providing your pet with routine veterinary care and some simple health tips, you are less likely to get sick from touching, petting, or owning dogs in the United States.

Many others follow the same recommendations see -

https://www.petmd.com/dog/parasites/ways_to_reduce_zoonotic_diseases

<https://oregonvma.org/care-health/zoonotic-diseases/zoonotic-diseases-dogs>

<https://www.pethealthnetwork.com/dog-health/dog-diseases-conditions-a-z/what-can-i-catch-my-dog>

<https://www.avma.org/public/PetCare/Pages/Pets-and-Zoonotic-Diseases-FAQs.aspx>

<https://vcahospitals.com/know-your-pet/zoonotic-diseases-in-dogs>

https://www.aaha.org/pet_owner/pet_health_library/general_health_care/diseases_transmitted_by_pets.aspx

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5319273/>

<https://www.healthline.com/health/pet-health/dogs-restaurant-health-risk#2>

The most common diseases associated with dogs that can cause human illness are:

Campylobacteriosis (*Campylobacter* spp.)

Campylobacter spreads through contaminated food (meat and eggs), water, or contact with stool of infected animals. Dogs infected with *Campylobacter* might show no signs of illness at all or might have diarrhea and a slight fever.

Most people who become sick with campylobacteriosis will have diarrhea, cramping, abdominal pain, and fever within 2-5 days after exposure to the organism. *Campylobacter* can cause serious life-threatening infections in infants, older persons, and those with weakened immune systems.

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Dog Tapeworm (*Dipylidium caninum*)

The dog tapeworm is a parasite spread to dogs, cats, and people through the ingestion of infected fleas. This parasite is common but rarely causes illness in pets or people. Infections with *Dipylidium caninum* can sometimes be detected by finding rice-like segments of the tapeworm crawling near the anus or in fresh bowel movements. In severe infections, pets can lose weight and have mild diarrhea.

In people, children are more commonly infected but don't usually show signs of disease. The best way to prevent infection in pets is to control the flea population in the environment.

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Hookworm (Zoonotic) (*Ancylostoma caninum*, *Ancylostoma braziliense*, *Uncinaria stenocephala*)

Dog hookworms are tiny worms that can spread through contact with contaminated soil or sand. Dogs can also become infected with hookworms through accidentally ingesting the parasite from the environment or through their mother's milk or colostrum. Young puppies are most often affected and might have dark, bloody stool and anemia. Severe infections in some puppies can lead to death.

People become infected with dog hookworms while walking barefoot, kneeling, or sitting on ground contaminated with stool of infected animals. Hookworm larvae enter the top layers of skin and cause an itchy reaction called cutaneous larva migrans. A red squiggly line might appear where the larvae have migrated under the skin. Symptoms usually resolve without medical treatment in 4-6 weeks.

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Rabies

Rabies, a fatal neurologic disease in animals and people, is caused by a virus. Animals and people are most commonly infected through bites from rabid animals. Infected dogs might have a variety of signs,

but most often have a sudden behavioral change and progressive paralysis. Rabies is prevented by vaccination.

The first symptoms in people can start days to months after exposure and include generalized weakness, fever, and headache. Within a few days symptoms will progress to confusion, anxiety, behavioral changes, and delirium. If you have been bitten by a dog or other animal and feel that there is a risk for rabies, contact your health care provider right away. Once symptoms appear, it is almost always too late for treatment.

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Roundworm (*Toxocara* spp.)

Toxocara roundworms cause a parasitic disease known as toxocariasis. Dogs and people can become infected by accidentally swallowing roundworm eggs from the environment. In addition, larval worms can cross through the placenta, milk, or colostrum of a mother dog, passing the infection to her puppies. Infected puppies usually do not develop and grow well and might have a pot-bellied appearance.

In people, children are most often affected with roundworm. There are two forms of the disease in people. Ocular larva migrans happens when the larvae invade the retina and cause inflammation, scarring, and possibly blindness. Visceral larva migrans occurs when the larvae invade parts of the body, such as the liver, lung, or central nervous system.

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Less common diseases associated with dogs that can cause human illness are:

Brucellosis (*Brucella* spp.)

Brucellosis is a bacterial disease that affects the ability of animals to reproduce. The disease can be transmitted to humans through contact with recently aborted tissue from infected animals or consumption of unpasteurized (raw) milk. Dogs that are infected might have decreased appetite, weight loss, behavioral changes, and lack of energy, but most dogs infected with brucellosis show no signs of illness. Brucellosis affects the reproductive organs and can cause early-term deaths of developing puppies.

People who are infected with brucellosis will usually become sick within 6-8 weeks of exposure. Sick people will have flu-like symptoms that last 2-4 weeks. Sometimes brucellosis can become a chronic illness that can be difficult to treat.

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Capnocytophaga spp.

Many species of *Capnocytophaga* bacteria live in the mouths of dogs and cats. These bacteria do not make dogs or cats sick.

Rarely, *Capnocytophaga* can spread to people through bites, scratches, or close contact from a dog or cat and cause illness. Most people who have contact with a dog or cat do not become sick. People with weakened immune systems who have difficulty fighting off infections (for example, people with cancer or those taking certain medications such as steroids) are at greater risk of becoming ill.

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Cryptosporidiosis (Cryptosporidium spp.)

Cryptosporidium is a parasitic disease that is transmitted through contaminated food or water from an infected person or animal.

Cryptosporidium illness in dogs is rarely seen, but they can carry the germ without showing any signs of illness.

Cryptosporidium can cause profuse, watery diarrhea with cramping, abdominal pain, and nausea in both animals and people. Illness in people is usually self-limiting and lasts only 2-4 days, but can become severe in people with weakened immune systems.

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Echinococcosis (Echinococcus spp.)

Echinococcosis is a parasitic disease caused by eating or drinking food and water contaminated with a specific type of tapeworm eggs or through contact with an infected animal. Dogs become infected by eating tissue of an infected animal. Dogs rarely show any signs of disease, but if they are infected with a large number of worms, dogs can have diarrhea and enteritis.

Although *Echinococcus* invades many different organs of the body, most people who are infected with the disease will not have any signs of illness for years. Symptoms start when the slow-growing cysts become large enough to press on the organs they have invaded. The tapeworms grow slowly in several different organs of the body, most commonly the liver and lungs.

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Ehrlichiosis (*Ehrlichia* spp.)

Ehrlichiosis is a bacterial disease that affects animals and people and is **transmitted by ticks**. Dogs show variable signs that include depression, loss of stamina, stiffness and reluctance to walk, and coughing.

People show similar signs and symptoms, which include fever, headache, chills, muscle pain, nausea, vomiting, diarrhea, and rash.

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Giardiasis (*Giardia* spp.)

Giardia is a parasite that causes diarrhea in animals and people. ***Giardia* is transmitted to animals and people through food or water contaminated with stool.**

Symptoms in animals and people include diarrhea, greasy stools, and dehydration. People can also have abdominal cramps, nausea, and vomiting. Symptoms can last 1-2 weeks.

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Leishmaniasis (*Leishmania* spp.)

Leishmaniasis is a protozoan disease of people and animals. It is transmitted by sandflies and is uncommon in North America. The two forms of the disease are visceral and cutaneous. The cutaneous form of leishmaniasis is most common in people and appears as one or more painless ulcers on the skin. Visceral leishmaniasis is less common and is characterized by fever, weight loss, enlarged spleen, and anemia. Dogs can develop both forms at the same time and have a variety of symptoms.

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Leptospirosis (*Leptospira* spp.)

Leptospirosis is a bacterial disease of people and animals that is **transmitted through contaminated water and urine or other body fluids from an infected animal**. It is difficult to detect early stages of leptospirosis in animals, but the disease can lead to kidney and liver failure if left untreated.

People who become infected with leptospirosis might not have any signs of the disease. Others will have nonspecific flu-like signs within 2-7 days after exposure. These symptoms usually resolve without medical treatment, but can reappear and lead to more severe disease.

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Lyme Disease (*Borrelia burgdorferi*)

Lyme disease is a bacterial disease of people and animals **transmitted by ticks**. In dogs the most common signs of illness of Lyme disease are lameness, fever, reluctance to eat, lack of energy, and enlarged lymph nodes, with or without swollen, painful joints.

Infected people will typically have a red "bull's eye" rash at the site of the tick bite that appears about 7 days after being bitten. Flu-like symptoms quickly follow the rash. If not treated, this disease can spread to other parts of the body and cause symptoms such as arthritis and loss of facial muscle tone (Bell's palsy). Lyme disease can be fatal.

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MRSA (Methicillin-Resistant *Staphylococcus aureus*)

Staphylococcus aureus is a common type of bacteria that is normally found on the skin of people and animals. Methicillin-resistant *Staphylococcus aureus* (MRSA) is the same bacterium that has become resistant to some antibiotics. Dogs and other animals often can carry MRSA without being sick, but MRSA can cause a variety of infections, including of the skin, respiratory tract, and urinary tract.

MRSA can be transmitted back and forth between people and animals through direct contact. In people, MRSA most often causes skin infections that can range from mild to severe. If left untreated, MRSA can spread to the bloodstream or lungs and cause life-threatening infections.

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Pasteurellosis (*Pasteurella* spp.)

Pasteurellosis is a bacterial disease **associated with animal bites and scratches**. *Pasteurella* is a normal bacterium that lives in the mouths of healthy dogs. The bacteria do not typically make dogs sick; however, dogs can develop abscesses or skin infections in places where they were scratched or bitten by another animal.

Pasteurella is found in 50% of patients with infected dog bite wounds. *Pasteurella* can cause painful wound and skin infections. In more severe cases, it can cause widespread infection and might even affect the nervous system.

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Plague (*Yersinia pestis*)

Plague is a bacterial disease in animals and people that can lead to serious illness if left untreated. Dogs are unlikely to develop clinical disease if infected.

People most often become infected through flea bites or from contact with body fluids of infected animals. An example is a hunter skinning an infected rabbit or other animal. Bubonic plague is the most common form; symptoms include sudden onset of high fever, chills, headache, malaise, and swollen lymph nodes. The other two forms of plague, septicemic and pneumonic, cause more severe disease.

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Ringworm (*Microsporum canis*)

Ringworm is a condition caused by a fungus that can infect skin, hair, and nails of both people and animals. Ringworm is transmitted from animals to people through direct contact with an infected animal's skin or hair. Puppies are most commonly affected and can have circular areas of hair loss anywhere on the body.

Ringworm infections in people can appear on almost any area of the body. These infections are usually itchy. Redness, scaling, cracking of the skin, or a ring-shaped rash may occur. If the infection involves the scalp or beard, hair may fall out. Infected nails become discolored or thick and may possibly crumble.

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Rocky Mountain Spotted Fever (*Rickettsia rickettsii*)

Rocky Mountain spotted fever (RMSF) is a bacterial disease transmitted to dogs and people by ticks. Dogs show a variety of symptoms similar to those in people, including fever, lameness, coughing, vomiting and diarrhea, and swelling of the face or extremities.

People start showing signs 2-14 days after exposure; these may include fever, rash, headache, nausea, vomiting, abdominal pain, and muscle pain. RMSF can develop into a serious illness if not promptly treated.

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Salmonellosis (*Salmonella* spp.)

Salmonella spreads to people through contaminated food (eggs and meat) or contact with stool of certain animals including dogs. *Salmonella* infections have been linked to some brands of dry dog food, treats, and chew toys like pig ears and to "raw food" diets for dogs. While it usually doesn't make the dogs sick, *Salmonella* can cause serious illness when it is passed to people.

People exposed to *Salmonella* might have diarrhea, vomiting, fever, or abdominal cramps. Infants, elderly persons, and those with weakened immune systems are more likely than others to develop severe illness.

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Sarcoptic Mange (*Sarcoptes scabiei*), also known as Mange

Sarcoptic mange is a parasitic skin disease that is caused by a tiny mite. Mange is transmitted between animals through close contact. In dogs, the mite causes severe itching and self-inflicted wounds from scratching.

People can't become infested with the canine version of sarcoptic mange, but they can have a minor local reaction from the mites if they come in contact with an infested dog.

These infections are more common in people with weakened immune systems, such as children, cancer patients, pregnant women, and elderly folks (<https://www.pethealthnetwork.com/dog-health/dog-diseases-conditions-a-z/what-can-i-catch-my-dog>).

5-5-3: ANIMALS PROHIBITED IN PUBLIC BUILDINGS AND BUSINESSES:

It shall be unlawful for any animal, even though on a leash, to be in or enter any public building, food establishment, or any business except a business for the sale or treatment of animals or business offering services or goods for animals, anywhere within the Village during the time that any of said places are open for use by the public, except for:

- A. Service animals;
- B. Dogs used by persons in the employ of recognized local, state or federal law enforcement agencies;
- C. Animals presented in animal exhibits;
- D. Animals participating in authorized animal obedience training classes; or
- E. Animals kept by the owner or operator of a business establishment. (Ord. 15-138, 8-3-2015)

[NEW] F. Dogs in establishments with a Craft Brew Lounge Class D-16 Liquor License as long as the following requirements are met:

- (1) A sign in a typeface that is large enough to be easily legible to the average person and that is in a location that is plainly visible to the patrons of the food establishment notifying the patrons of

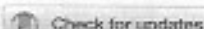
the policy of the restaurant allowing dogs in the Craft Beer Lounge and contain the statement "For violations, contact the Oak Park Department of Health (708) 358-5480."

- (2) No food may be prepared or provided.
- (3) The Craft Brew Lounge must be continuously maintained free of visible dog hair, dog dander and other dog-related waste and debris. The interior shall be mopped with animal-friendly chemicals at the beginning of each shift during which food or beverages are served (breakfast, lunch, dinner, or late-hours). If the Craft Brew Lounge has continuous food or beverage service without designated shifts, then the interior shall be mopped with animal-friendly chemicals every six hours that the Craft Brew Lounge is open for business, except that such cleaning is not required if no dog has been present since the last cleaning. Waste created from a dog's bodily functions must be immediately cleaned up with animal-friendly chemicals. All dog waste shall be placed in a fly-tight container located outside of the Craft Brew Lounge in an appropriately covered waste receptacle.
- (4) Employees shall not touch, pet or otherwise handle any dog while on duty. If an employee does touch or pet a dog, they shall wash their hands promptly before resuming their duties after touching, petting, or otherwise handling dogs.
- (5) All dogs shall be kept on a leash no longer than five (5) feet and remain in the control of the customer at all times while in the Craft Brew Lounge. All dogs shall wear a collar or harness and have a current rabies vaccination. Any dog not kept on a leash at all times or not kept under control by its owner shall be immediately removed from the Craft Brew Lounge's premises. The owner shall have the right to refuse to serve the owner of any dog if the owner fails to keep the dog on a leash, or to exercise reasonable control over the dog, or the dog is otherwise behaving in a manner that compromises or threatens to compromise the health or safety of any person present.
- (6) Dogs shall not be allowed on any seat, chair, a patron's lap, table, countertop, or similar surface in the Craft Brew Lounge.
- (7) Dogs shall not be allowed to have any contact with reusable dishes or utensils. A dog may only have contact with disposable single service containers that provide water to the dog.
- (8) All patio surfaces shall be constructed of materials that are smooth, easily cleanable, and durable.

[NEW] G. A dog friendly patio as long as the following requirements are met:

- (1) A separate entrance shall be provided from the exterior of the food establishment to the outdoor patio so that a dog will have direct access to the patio without entering the interior of the food establishment. A dog on an outdoor patio shall not be allowed within seven feet of any entrance to the interior of the food establishment, except when necessary to enter or exit the patio.
- (2) A sign in a typeface that is large enough to be easily legible to the average person and that is in a location that is plainly visible to the patrons of the food establishment notifying the patrons of the policy of the restaurant allowing dogs in the outdoor dining area and contain the statement "For violations, contact the Oak Park Department of Health (708) 358-5480."
- (3) No food may be prepared, including mixing drinks and serving ice, in the outdoor patio area, except that a beverage glass may be filled from a pitcher or other container that has been filled or otherwise prepared inside the food establishment.

- (4) The outdoor patio must be continuously maintained free of visible dog hair, dog dander and other dog-related waste and debris. The outdoor patio shall be hosed down or mopped with animal-friendly chemicals at the beginning of each shift during which food or beverages are served (breakfast, lunch, dinner, or late-hours). If a food establishment has continuous food or beverage service without designated shifts, then the outdoor patio shall be hosed down or mopped with animal-friendly chemicals every six hours that the food establishment is open for business, except that such cleaning is not required if no dog has been present on the outdoor patio since the last cleaning. Waste created from a dog's bodily functions must be immediately cleaned up with animal-friendly chemicals. All dog waste shall be placed in a fly-tight container located adjacent to the patio area and disposed of outside of the food establishment in an appropriately covered waste receptacle.
- (5) Employees shall not touch, pet or otherwise handle any dog while on duty. If an employee does touch or pet a dog, they shall wash their hands promptly before resuming their duties after touching, petting, or otherwise handling dogs.
- (6) All dogs shall be kept on a leash no longer than five (5) feet and remain in the control of the customer at all times while in the outdoor patio area. All dogs shall wear a collar or harness and have a current rabies vaccination. Any dog not kept on a leash at all times or not kept under control by its owner shall be immediately removed from the food establishment's premises. The owner shall have the right to refuse to serve the owner of any dog if the owner fails to keep the dog on a leash, or to exercise reasonable control over the dog, or the dog is otherwise behaving in a manner that compromises or threatens to compromise the health or safety of any person present.
- (7) Dogs shall not be allowed on any seat, chair, a patron's lap, table, countertop, or similar surface in the outdoor patio area.
- (8) Dogs shall not be allowed to have any contact with reusable food service dishes or utensils. A dog may only have contact with disposable single service containers that provide water to the dog.
- (9) All patio surfaces shall be constructed of materials that are smooth, easily cleanable, and durable.
- (10) Nothing in this section shall require an owner to permit any dogs, other than those listed under subsections A through E.



Zoonotic Infections From Common Household Pets

Jean O'Neil, DNP, FNP-BC

ABSTRACT

Animal to human zoonosis is when an animal transmits infections, such as viruses, bacteria, parasites, and fungi, to humans via direct or indirect contact. Common household pets can be a source of these infections. Most of these zoonotic infections go unrecognized by the primary care provider and, therefore, may go unreported or untreated. Although most people contract mild cases of these diseases, zoonotic infections can become quite devastating for those who are very young, pregnant, elderly, or immunocompromised.

Keywords: animal, human, infection, pets, zoonosis, zoonotic

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Jean O'Neil, DNP, FNP-BC, is an assistant professor for the MSN-NP program at California State University in Los Angeles, CA, and a nurse practitioner at USC Verdugo Hills Hospital Emergency Room in Glendale, CA. She can be reached at joneil3@calstatela.edu. In compliance with national ethical guidelines, the author reports no relationships with business or industry that would pose a conflict of interest.

Pets offer us a source of comfort and companionship. Many households consider their pets as part of their family. Research shows that pets can lower our blood pressure, decrease depression, and even lower our cholesterol.¹ However, even with these benefits, it must be remembered that pets can also present risks of infection through animal to human transmission.² Infections contracted from animals are called zoonotic. These infections can be especially worrisome, and possibly even fatal, in very young children, pregnant women, the elderly, and those who are immunocompromised.³ In September 2017, 39 people, 9 of whom were hospitalized for severe diarrhea and dehydration, were infected by the bacteria *Campylobacter* through the handling of infected puppies purchased from a popular pet store

chain.⁴ In fact, 3 of 5 new human infections are caused by some form of zoonosis.⁵ These types of infections are often missed or there is a delay in diagnosis because of the provider's lack of knowledge regarding zoonotic infections.⁶

TRANSMISSION OF PET-RELATED INFECTIONS

Animal to human zoonosis occurs when an animal transmits organisms such as viruses, bacteria, parasites, and fungi to humans through various mechanisms, which cause illness. These illnesses can be transmitted from direct or indirect contact. Direct contact requires the human to be licked or bitten by an infected animal. Infections from indirect animal contact occur by touching surfaces that were contacted by an infected animal, being bitten by an infected vector such as a mosquito, inhaling

This CE learning activity is designed to augment the knowledge, skills, and attitudes of nurse practitioners and assist in their understanding of diagnosis and treatment of zoonotic infections from common household pets.

At the conclusion of this activity, the participant will be able to:

- Describe modes of transmission related to various zoonotic infections
- Recognize clinical presentations related to common zoonotic infections
- Discuss treatments related to common zoonotic infections

The author, reviewers, editors, and nurse planner all report no financial relationships that would pose a conflict of interest.

The author does not present any off-label or non-FDA-approved recommendations for treatment.

This activity has been awarded 1.0 Contact Hours of which 0.25 credit are in the area of Pharmacology. The activity is valid for CE credit until June 1, 2020.

infected particles, or eating or drinking contaminated foods and liquids.⁷

HOW ZOOONOTIC INFECTIONS ARE TRACKED

The Centers for Disease Control and Prevention and the World Health Organization work to track, study, and disseminate information regarding major health risks from animals. However, zoonotic infections transmitted from common household pets to humans are not as well reported.⁸ It was recognized early on that there was a need for the collaboration of medical professionals, human and veterinary, as well as other related disciplines, to come together as one group to improve the health of people, animals, and the environment. The concept of One Health was officially recognized in the United States (US) by the formation of the One Health Commission. Representatives from the American Veterinary Medical Association formed the One Health Initiative in 2007.⁹ The American Medical Association joined later that same year. This group also works with other global health professionals to perform research, training, and education in order to prevent diseases in humans and animals. They share information related to disease detection, develop new therapies and treatments, and monitor environmental changes that could cause potential new or reemerging diseases.⁹

The US has excellent and readily available veterinary care, as well as government restrictions regarding the ownership of certain animals. Because of proper hygienic practices, zoonotic illnesses are less common in the US than in other countries. However, with our improved technology and increased travel to remote and exotic areas, animals are now transported out of their natural habitats or country of origin across the globe to new homes, carrying with them potential zoonotic illnesses.⁶ There is an increase in the number of certain pathogenic zoonotic diseases in countries where these problems had not previously existed.⁶

Traditional household pets not only include dogs and cats but also rodents, rabbits, ferrets, birds, amphibians, reptiles, and fish.² Pet ownership is not exclusive to any one country, culture, or socioeconomic group. It is estimated that, in the US alone, approximately 63% to

75% of American homes own 1 or more pets.^{3,10} Although there are many types of zoonotic illnesses, this article focuses on the more common and well-known zoonotic animal to human infections that are caused by direct contact with infected household pets through petting, licking, or physical injury, as well as indirect contact through handling infected animal waste products. A summary of these diseases, their diagnosis, and recommended treatments can be found in the Table.

COMMON ZOOONOTIC INFECTIONS FROM HOUSEHOLD PETS

Parasitic Infections

Toxoplasmosis is perhaps the most common parasitic zoonotic infection seen in primary care.^{3,11} One third of the world's population has been infected with this parasite, but it often remains unrecognized because most patients are asymptomatic. However, it can pose a threat to pregnant women and their fetuses, as well as to those who are immunocompromised.¹¹ It is caused by the protozoan *Toxoplasma gondii*. Although the majority of toxoplasmosis occurs through eating undercooked contaminated meat, indirect transmission can occur between common household animals to humans when the parasite is transmitted through infected cat feces that contain oocysts formed from parasitic sexual reproduction.¹² In most cases, these oocysts do not cause a severe infection. However, in a small percentage of people, these oocysts can proliferate and migrate to different organs of the body. Humans contract this disease when hygiene measures have not been observed, such as when cleaning the litter box or gardening without gloves in soil containing feces from infected animals.¹² Although cats are the primary reservoir for this infection, dogs have also been known to transmit this disease because of their propensity to roll in dirt that may contain infected feces.¹¹

Symptomatic patients may present with cervical lymphadenopathy and a mononucleosis-like illness that includes fever, headaches, muscle pain, lymphadenopathy, and pharyngitis.¹¹ These symptoms are usually self-limiting. However, an acute infection in a

pregnant woman, especially during the first trimester, can lead to fetal transmission, which causes congenital toxoplasmosis. Signs and symptoms of an infant infected by toxoplasmosis can include hydrocephalus, convulsions, blindness, intracranial calcifications, strabismus, thrombocytopenia, and anemia.¹¹ There are an estimated 3,000 of these congenital infections in the US yearly.³ Chorioretinitis, an inflammation of the choroid and retina of the eye, as well as neurologic deficits can occur in childhood or adulthood years after fetal exposure, especially if the affected person becomes immunocompromised.¹¹

Diagnosis of this disease is usually made from a thorough patient history, physical examination, and a serologic test called the immunoglobulin G avidity assay, which measures the strength of immunoglobulin G binding to *Toxoplasma gondii*.¹¹ In pregnant women, when there is a suspicion of fetal infection, additional tests, including an ultrasound and amniocentesis, are performed.¹¹ These tests are expensive and are not always conclusive. In the US, the infection rate of pregnant women is relatively low, and, therefore, routine serologic screening is not recommended. However, in areas with a high prevalence of toxoplasmosis, screening tests are recommended, especially during pregnancy. Treatment of confirmed toxoplasmosis is with antibiotics, some of which can be highly toxic (Table). Therefore, the patient must be carefully monitored for adverse effects.³ Prevention of this problem, especially in pregnant women, consists of keeping cats indoors if possible, washing hands after contact with cats, avoiding cleaning their litter box, and using gloves while gardening to prevent possible contamination from cat or pet feces or excrement.

Roundworm infection, also known as toxocariasis, is carried by both dogs (*Toxocara canis*) and cats (*Toxocara cati*).¹³ Larvae are passed through the feces of these infected animals. Humans can become infected with these larvae when working with contaminated soil or playing in contaminated sandboxes, where there may be ingestion of the infected soil or sand. This infection appears to be more prevalent in children and socioeconomically disadvantaged populations because of inconsistent hygiene practices. One study showed that 13.9% of

the US population 6 years of age or older had already developed antibodies to *Toxocara*.¹³

These larvae rarely develop into adult worms in humans; therefore, the infection is usually asymptomatic and self-limiting. However, sometimes the larvae can migrate through the human body where they can settle in the liver, lungs, or central nervous system causing visceral larva migrans. The larvae can also travel to the eye causing ocular larva migrans. There are approximately 10,000 cases of visceral larva migrans and 700 cases of ocular larva migrans reported in the US annually.³ Signs and symptoms of visceral larva migrans can include coughing, fever, eosinophilia, seizures, respiratory distress, hepatosplenomegaly, weight loss, rash, abdominal pain, and anorexia.³ Although rare, it can lead to pneumonia, myocarditis, and central nervous system changes.³ Ocular larva migrans can lead to chorioretinitis and uveitis causing the patient to have eye pain, decreased visual acuity, retinal scarring, and ultimately loss of vision.¹⁴ Diagnosis and treatment of these conditions will require a referral to an infectious disease physician, as well as an ophthalmologist, and may involve the use of albendazole and steroids (Table).¹⁴

Cutaneous larva migrans is caused by a dog or cat infected with *Ancylostoma* or hookworms. Fecal matter infected with hookworm larvae can infect humans if the larvae penetrate the skin. Walking barefoot in contaminated soil can put the person at risk of contracting this disease. These larvae cannot reproduce in the human body but can cause a red, pruritic papule followed by a linear track that advances under the skin as the larvae migrate. This causes severe itching, especially at night.¹⁵ Diagnosis of cutaneous larva migrans is usually made by examining the skin. However, the lesion can be biopsied as well for a more definitive result. Treatment with oral ivermectin is the drug of choice (Table).¹⁵

Fungal Infections

Ringworm or tinea corporis is the common name for a fungal infection that is on the surface of the skin. This condition is also known as dermatophytosis.³ Animals can be affected by ringworm and can transmit it to humans.¹⁶ Signs and symptoms of this

condition usually involve erythematous circular or oval plaques, itching, and hair loss in the area of the lesion. Diagnosis of this problem can be made by placing potassium iodide onto skin scrapings to be read under a microscope. This will show segmented hyphae if it is tinea.¹⁷ Dermatophytosis is more annoying than dangerous to humans and can be easily treated.¹⁷ Topical antifungal agents, such as azoles, usually resolve the problem quickly. Systemic treatment is sometimes needed for cases that are extensive or refractory to topical meds. Terbinafine and itraconazole are common systemic treatments (Table).¹⁷

Bacterial Infections

Two of the most common bacterial infections contracted from common household pets are caused by *Campylobacter* causing campylobacteriosis and *Salmonella* causing salmonellosis.³ These are the primary causes of zoonotic bacterial gastroenteritis.¹⁸

Campylobacter affects approximately 1.3 million people per year.¹⁹ Although most of these infections are caused by the ingestion of contaminated food and water, dogs and cats, as well as many other household pets, such as mice and birds, can carry this bacterium. More than 50% of animals with *Campylobacter* are asymptomatic.^{2,18} Transmission from household pets is through fecal-oral contact. Humans can contract this bacterium if they come in contact with feces from infected animals. People affected by *Campylobacter* usually have self-limiting fever, diarrhea, bloody stools, and abdominal pain that can be treated with rest and hydration.¹ However, in 1 in every 1,000 cases, a very serious complication of Guillain-Barre syndrome can occur. This is brought on by the effect this bacterium has on the patient's immune system. Stool cultures and antibiotics are usually only needed for those patients who are very ill or are at high risk for worsening effects of this infection because of comorbidities, such as those with weakened immune systems. Azithromycin, clindamycin, or ciprofloxacin can be used if antibiotics are needed (Table).¹⁹

Even though the majority of infections by *Salmonella* are food borne, approximately 6% can

be carried and transmitted by cats, dogs, ducklings, and chicks, as well as direct or indirect contact with reptiles, especially turtles and iguanas.³ Approximately 90% of all reptiles carry *Salmonella* as part of their normal intestinal flora.³ Salmonellosis caused by small pet turtles was such a problem that in 1975 the federal government prohibited the sale of these reptiles if they were less than 4 inches in length.^{2,3} This restriction in size was intended to reduce the incidence of small children putting turtles in their mouth.³ The average age of children who contract *Salmonella* from pet turtles is 4 years old.²⁰ From 2011 to 2013, there was a multistate outbreak of salmonellosis from pet turtles, causing 473 people to get sick, including 78 hospitalizations. These patients were between the ages of 1 and 94 years old, with 70% of them being 10 years old and younger.²⁰ Unfortunately, these small turtles are still being sold illegally by various vendors.²⁰

Salmonella can lead to severe infections, especially in children, the elderly, and the immunocompromised. Signs and symptoms of this infection are fever, nausea, vomiting, abdominal cramping, and diarrhea. Bloody stools can be seen in children but are not common in adults.²¹ If the symptoms are mild, then the treatment is hydration, antipyretics, and a liquid diet, which is advanced to solids as diarrhea lessens. This infection is usually self-limiting and lasts between 4 and 10 days. However, in more severe cases, it can lead to dehydration and sepsis.² Stools for white blood cell count and culture help guide the treatment. If antibiotics are needed, fluoroquinolones and trimethoprim/sulfamethoxazole are most often the drugs of choice (Table).²¹

Cat scratch disease (CSD) is caused by the bacteria *Bartonella henselae* and is most commonly transmitted by cats, although dogs can also be a source of this infection. Approximately 22,000 people in the US are affected by CSD annually.²² Cats contract this bacteria through infected fleas. Many cats contract this bacteria in their lifetime, but they can be asymptomatic. When an infected cat scratches a human and breaks the skin, it can transmit the bacteria. This animal to human transmission leads to symptoms of fever, malaise,

Table. Zoonotic Infections From Common Household Pets in the United States

Disease	Diagnosis	Symptoms	Treatment
Parasitic:			
Toxoplasmosis	IgG avidity assay, amniocentesis	Cervical lymphadenopathy, fever, headaches, myalgia, pharyngitis, fetal infections	Pyrimethamine Sulfadiazine Leucovorin
Toxocara (visceral and ocular larva migrans)	CBC, eosinophils, ELISA testing	Respiratory distress, fever, eosinophilia, seizures, decreased visual acuity (ocular) hepatosplenomegaly,	Albendazole Corticosteroids
Ancylostoma (cutaneous larva migrans)	Skin biopsy	Visualization of red, linear tracks on skin, itching	Ivermectin
Fungal:			
Tinea	KOH prep slide	Erythematous circular or oval skin plaques, itching	Griseofulvin (Global Pharmaceuticals, Chalfont, PA), Fluconazole, Clotrimazole, Ketoconazole
Bacterial:			
Campylobacter	Stool culture	Diarrhea, fever, gastric upset	Azithromycin Clindamycin, Ciprofloxacin
Salmonella	Stool culture	Diarrhea, fever, gastric upset	Ciprofloxacin Ceftriaxone TMP/SMX
Bartonella	IFA, wound culture biopsy of lymph node	Fever, malaise, unilateral, lymphadenopathy near scratch	Azithromycin Rifampin Ciprofloxacin Gentamicin TMP/SMX
MRSA	Wound culture	Skin and soft tissue infection	Doxycycline Clindamycin, TMP-SMX Vancomycin, IV
Pasteurella	CBC, wound culture, MRI (osteomyelitis)	Fever, infection of wound site	Amoxil clavulanate (Apotex Corporation, Weston, Florida) Doxycycline Clindamycin with either TMP/SMX or Levofloxacin
Chlamydophila P.	CBC, CXR, Blood C/S	Fever, flu-like illness, pneumonia	Doxycycline Erythromycin
Viral:			
Rabies	PCR serology testing, Spinal fluid, skin testing	Fever, headache, hydrophobia, paralysis, hyperactivity, confusion, Hallucinations, and other neurologic changes	Preexposure HDCV vaccine: days 1, 7, 21 Postexposure: RIG infiltrate into wound and IM, followed by HDCV days 0, 3, 7, 14

CBC = complete blood count; C/S = culture/sensitivity; CXR = chest X-ray; ELISA = enzyme-linked immunosorbent assay; HDCV = human diploid cell vaccine; IV = intravenous; IFA = indirect fluorescence assay; IgG = immunoglobulin G; IM = intramuscularly; KOH = potassium iodide; MRI = magnetic resonance imaging; MRSA = methicillin-resistant *Staphylococcus aureus*; PCR = polymerase chain reaction; RIG = rabies immune globulin; TMP/SMX = trimethoprim-sulfamethoxazole.

anorexia, and regional unilateral lymphadenopathy near the scratch in approximately 3 to 14 days.²² The infected wound may become painful, red, and swollen and may drain pus. This is usually a self-limited infection that can last from a few weeks to months.³ There are no routine laboratory tests performed to rule out CSD, unless the patient starts getting complications. In severe cases, encephalitis, neuroretinitis, endocarditis, and angiomatosis can arise.²² These conditions occur more often in immunocompromised patients. Diagnosis can then be made by indirect fluorescence assay serology, a wound culture, and biopsy of the site or lymph node. If visceral involvement is suspected, then an abdominal computed tomographic scan would show multiple defects in the liver and spleen.²³ The most common antibiotic treatment, if needed, is azithromycin (Table).²²

Methicillin-resistant *Staphylococcus aureus* (MRSA) can be transmitted from animals to humans, as well as from humans to animals. It is believed that common household animals are a main reservoir of MRSA. If the pet is colonized by this bacterium, sometimes after initially being infected by a human, it can spread to other animals. It can also be passed back to humans causing reinfection.^{1,3} If the provider sees that his or her patient has a continuous problem of MRSA reinfection, then all household members, including pets, should be cultured and treated if necessary. Symptomatic animals, like humans, can have skin and soft tissue infections that begin with a red, raised lesion that appears like an infected pimple, boil, or insect bite. In humans, MRSA can lead to more severe problems such as endocarditis, osteomyelitis, pneumonia, and sepsis.³ Diagnosis involves a wound culture and sensitivity. A simple abscess can be incised and drained and may not require antibiotics. However, more extensive or recurring MRSA infections may require treatment with doxycycline, clindamycin, or trimethoprim/sulfamethoxazole (Table).³

There are an estimated 2 to 5 million animal bites per year, with children being bitten more often than adults.²⁴ These bites also account for approximately 1% of emergency room visits.² Dog and cat bites most often transmit *Pasteurella multocida*. Cat bites tend to cause more wound infections than dog bites.

Cats have long, slender, and sharp teeth, which cause puncture wounds that can lead to osteomyelitis.²⁴ Although dog bites account for most of the reported animal bites, it has been estimated that 20% to 80% of cat bites become infected compared with 3% to 18% of dog bites.² Immediate and thorough cleansing of the bite with soap and water, as well as applying pressure to the area to stop any bleeding, can decrease the chances of infection. Cellulitis, where the skin is red, swollen, and occasionally with purulent discharge, can occur in the area of the bite. A wound culture of the drainage from the bite can help identify the bacteria. If osteomyelitis is a concern, then magnetic resonance imaging of the area should be considered.²⁵ For some cases, surgical debridement of the wound may be necessary.²⁵ Antimicrobial prophylaxis is required if the wound is located on the face, joints, or tendon sheaths or is at high risk for becoming infected. Amoxicillin/clavulanate is suggested as the first drug of choice for empiric treatment of animal bites (Table).²⁵ The provider should also make sure the patient is up-to-date on his or her tetanus vaccine.²⁴ Severe infections may lead to sepsis, which requires hospitalization and aggressive medical treatment. Bites by unknown dogs, cats, or any animal should be reported to animal control authorities, and the patient may need rabies prophylaxis or treatment.

Psittacosis, caused by *Chlamydia psittaci*, is transmitted to humans by infected birds, such as cockatiels, parakeets, parrots, and macaws, through exposure to their feces and nasal secretions.²⁶ Birds with this disease may display ruffled feathers, lethargy, and anorexia.³ An owner or handler can get this disease through simply kissing an infected bird or cleaning its cage. Symptoms of this infection usually include a mild flulike illness with fever, lethargy, headache, and pharyngitis.²⁶ These symptoms are usually self-limiting and usually only require supportive treatment. However, psittacosis has been known to cause pneumonia, confusion, and delirium. Diagnosis of this infection requires a microimmunofluorescence test to see if there is an increase in anti-*C. psittaci* antibodies. If more than supportive treatment is needed, then doxycycline or erythromycin is the antibiotic of choice (Table).³

Viral Infection

The viral zoonosis known to most practitioners is rabies. Rabies is caused by a negative-stranded RNA virus of the *Lyssavirus* genus that is mainly transmitted through saliva after a bite by an infected animal.³ Although domestic cats and dogs can spread rabies, dog bites are responsible for most of the rabies transmission to humans worldwide.¹ However, the widespread rabies vaccination program of domestic dogs has reduced the number of infections in the US. The most frequent source of a rabies infection in the US is now from bats.²⁷ People may ignore a bat bite or not be aware of being bitten while asleep because their bite is similar to a pinprick.²⁷ The World Health Organization reports an estimated 30,000 to 70,000 deaths occur annually from rabies. Most of these cases are in Asia and Africa.¹

The incubation period for rabies can be as short as 2 weeks or as long as 1 year depending on the location of the wound and the amount of inoculated rabies virus transmitted from the infected animal.^{1,3} Symptoms of rabies in humans usually begin with pain and itching in the area that was bitten. This is usually followed by fever, headache, hyperactivity, hydrophobia, anxiety, confusion, agitation, hallucinations, paralysis, and other neurologic changes.²⁷

Diagnosis of rabies is most certain if the offending animal can be watched and tested, which sometimes requires euthanizing the animal to analyze its brain tissue.²⁸ In symptomatic patients, diagnosis can be made by gathering specimens from saliva for polymerase chain reaction testing to identify the virus. Blood and spinal fluid are used to detect antibodies to the rabies virus. Skin biopsy specimens from the base of hair follicles can be examined for rabies antigen.²⁸ There is no effective treatment for rabies after the onset of symptoms. Therefore, the use of preexposure and postexposure medications is important when there is or was a risk of exposure (Table).³

Preexposure immunization with the human diploid cell vaccine is available for those who work in high-risk areas where there is possible exposure to the virus, such as laboratory workers and wildlife rangers. Travelers who participate in activities that take them

to known rabies-infected areas can receive pre-exposure prophylaxis. This vaccine is given on days 1, 7, and 21 (Table).²⁹

In the US, approximately 16,000 to 39,000 people who have had possible contact with rabid animals receive postexposure prophylaxis annually.²⁹ Postexposure prophylaxis is the immediate treatment of the patient after he or she has been bitten by a potentially rabies-infected animal. The risk of rabies goes down as much as 90% if the wound is immediately and thoroughly cleaned with the virucidal agent povidone-iodine.^{1,3} The rabies immune globulin is injected and infiltrated around the wound, as well as given intramuscularly. This is then followed by the human diploid cell vaccine given on days 0, 3, 7, and 14 intramuscularly in the deltoid for adults and the anterolateral thigh for young children (Table).²⁹ Treatment for rabies exposure may require the patient to be seen in the emergency room because many medical offices or clinics do not carry these vaccines. A tetanus vaccine should also be given if the patient is not up-to-date, as well as any antibiotics that might be necessary to prevent infection from *Pasteurella*.²⁹

IMPLICATIONS FOR PRACTICE

Companion animals can be a great source of comfort and joy. Having them in our lives can be enriching and educational. However, they can also lead to zoonotic infections in humans. Although serious animal to human infections are rare in the US, the industrialization of new cities, population growth, increased travel to remote and exotic areas by humans, and climate and environmental changes are causing the reemergence of old and the emergence of new zoonotic infections. Thorough histories and physicals, including information about contact with household pets, can provide the primary care provider with clues as to the source of these infections. The provider's knowledge of common zoonotic infections, as well as their appropriate testing and treatments, could potentially save the patient from frustration, multiple provider visits, expense, and, in some cases, severe illness or even death. Patients need to be educated regarding proper

handwashing techniques after handling pets, as well as the use of protective clothing such as gloves or masks when working around certain pets or possibly dealing with their waste products. This is especially important if they are young children, pregnant, elderly, or immunocompromised. Stressing the importance of keeping pets healthy and properly vaccinated through veterinary visits is another way to decrease the incidence of animal to human transmission of zoonotic illnesses, which will allow us to safely enjoy our animal companions. **JNP**

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