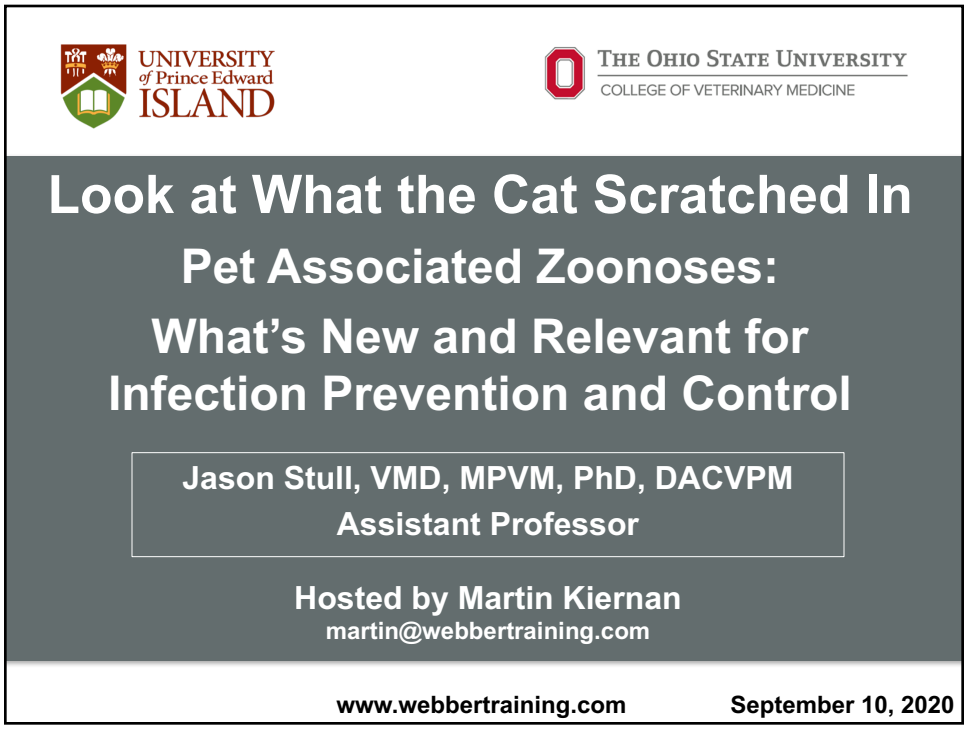
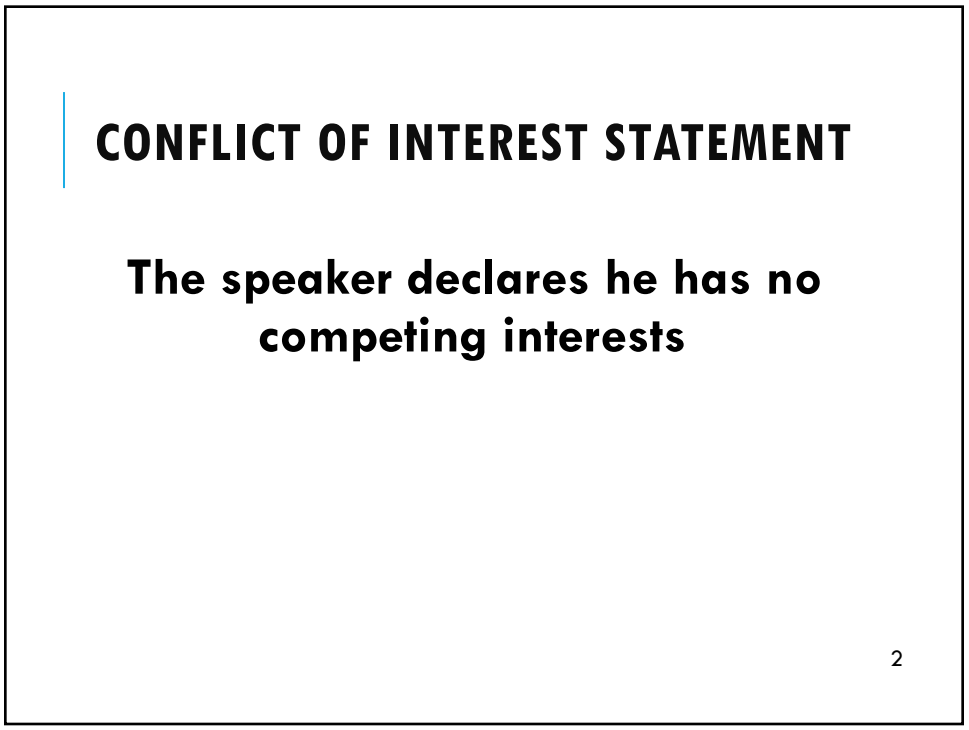
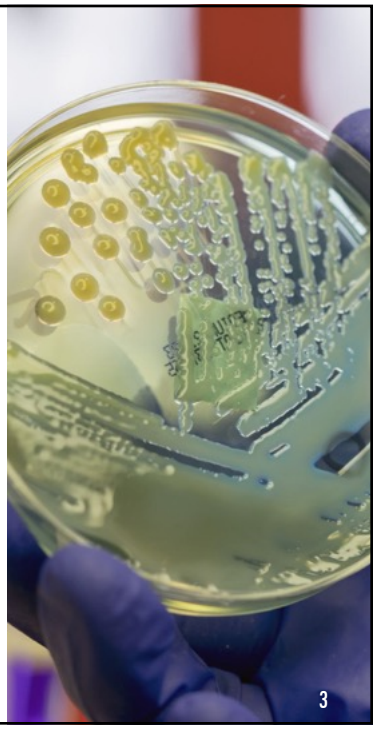

UNIVERSITY of Prince Edward ISLAND
THE OHIO STATE UNIVERSITY
COLLEGE OF VETERINARY MEDICINE
Look at What the Cat Scratched In
Pet Associated Zoonoses:
What's New and Relevant for Infection Prevention and Control
Jason Stull, VMD, MPVM, PhD, DACVPM
Assistant Professor
Hosted by Martin Kiernan
martin@webbertraining.com
www.webbertraining.com
September 10, 2020


CONFLICT OF INTEREST STATEMENT
The speaker declares he has no competing interests
2

OBJECTIVES

- Recall key pathogens associated with companion-animal (pet) zoonoses
- Describe current knowledge on the epidemiology of these pathogens in human disease
- Apply knowledge to develop and implement prevention strategies in various human-animal settings



3

PET OWNERSHIP IS COMMON

Majority of homes have at least 1 pet

- Dog or cat (>50%)
- Fish
- Birds
- Rabbits, hamsters, guinea pigs, gerbils, ferrets, snakes, frogs, turtles, lizards

Photo Source: Pixabay

4

HUMAN-ANIMAL BOND

Distress & social isolation: ↓ health

Often strong bonds pets and owners

- **↓ stress, anxiety, loneliness, depression[1]**
- **↓ risk cardiovascular disease[2]**
- **Children: better social skills, self-esteem, empathy[3]**
- **Catalyst for harm reduction (e.g., tobacco, drug use)[4]**

Photo Source: Pixabay

[1] Friedmann 2009 [2] Patronek 1993 [3] Melson 1997 [4] Lem 2013

5

IMMUNOCOMPROMISED

Photo Source: Pixabay

Mental & physical isolation

HIV-infected[1]

- **Pet as family member**
- **Source of support and affection**
- **Protect against loneliness**
- **Pet-owners with AIDS less depression than non-pet owners**

Cancer patients[2]

- **High level of attachment to pets**
- **Having a pet provided health benefits (67%)**

Immunocompromised children[3]

6

[1] Siegel 1999 [2] Larson 2010 [3] Stull 2014

PETS INCORPORATED INTO HUMAN HEALTHCARE[1]

- Builders of social capital
- Harm reduction
- Motivators for healthy behavior change
- Participants in treatment plans

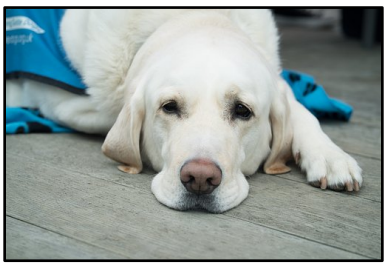


Photo Source: Pixabay

7

[1] Hodgson et al., 2015

8

ZOONOSES

Naturally transmitted from animals to people

Of 1,415 species pathogenic to people[1]

- 61% zoonotic
- 75% emerging pathogens zoonotic

9

[1] Taylor 2001

PET-ASSOCIATED DISEASE

70+ pathogens of pets transmissible to people

Pets often subclinical shedding

Emerging & remerging diseases

Animal and human reservoirs

Further transmission possible

Dogs visiting human healthcare facilities[1]

Photo Source: Pixabay

10

[1] Lefebvre 2009

PET-ASSOCIATED DISEASE RISKS

Disease risk greatest

- Extremes of age (<5 yrs, ≥ 65 yrs)
- Pregnant
- Immunocompromised

Higher risk groups

- Particular pathogens
- Longer duration
- More severe/unexpected complications

Pet factors

Photo Source: Pixabay

Photo Source: The New Yorker

12

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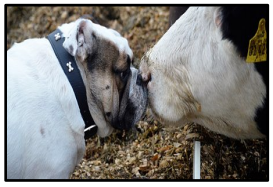
PET-ASSOCIATED DISEASE TRANSMISSION



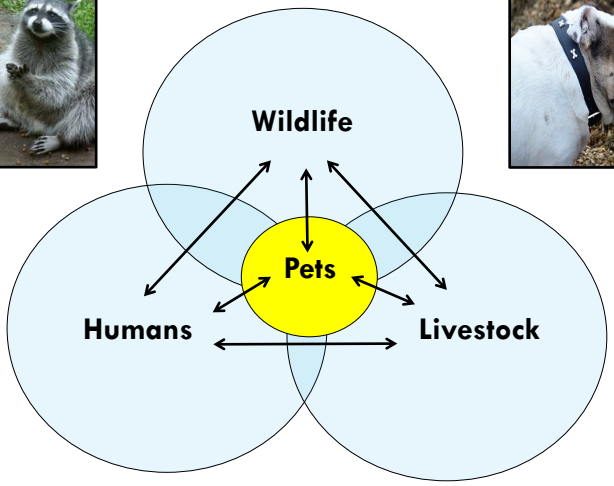


Photo Source: Pixabay

14

RELEVANCE OF PET-ASSOCIATED ZOONOSES FOR INFECTION PREVENTION

Healthcare programs

- Service animals, patient's pets, therapy animals, visitation animals

Patients

- Sick, preventive care, One Health

Simple precautions to greatly reduce risk

- Barriers: Lack of knowledge, reduced compliance preventive care

Incorporate into planning & patient history taking

Is fear driving the anti-vaccine movement?

Print full article

Despite the evident success of vaccination in reducing morbidity and mortality, there has always been controversy about the practice

May 22, 2019

By Brennen McKenzie, MA, MSc, VMD, cVMA

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Box 2: Pathogens of particular concern in pet-associated infections

Pathogen	Key pet sources	Disease in high-risk patients (age < 5 or ≥ 65 yr, immunocompromised or pregnant)	
		Incidence	Severity
Bacterial diseases			
Bartonella species	Cats (*B. clarridgeiae, B. henselae*); rodents, rabbits, and dogs (*B. alsatica, B. vinsonii* species)	Low (likely underdiagnosed)	Low to high
Brucella canis	Dogs	Rare	Moderate
Campylobacter jejuni	Dogs, cats (likely other species)	High	Low
Capnocytophaga canimorsus	Dogs, cats	Rare	High
Chlamydophila psittaci	Birds	Rare	Moderate
Leptospira interrogans	Dogs, cats, rodents	Low	Moderate
Multidrug-resistant bacteria (e.g., MRSA, *Clostridium difficile*, ESBL-producing organisms)	Likely all species (although data limited)	Variable	Variable
Mycobacterium marinum	Fish	Rare	Low
Pasteurella multocida	Dogs, cats	Moderate	Moderate
Salmonella species	All species; high prevalence in amphibians, reptiles, exotic animals, rodents and young poultry, in addition to certain raw pet foods (e.g., meat, eggs and animal product treats, such as pig's ears)	Moderate	Moderate (particularly in newborns and patients with sickle cell anemia)
Parasitic diseases			
Cutaneous larva migrans (hookworms; canine and feline)	Dogs, cats (particularly juvenile animals)	Low to high (depending on geography)	Low
Cryptosporidium species	Dogs, cats, possibly birds	Moderate	Moderate

Stull JW, et al. CMAJ 2015

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Box 3: Suggestions for reducing transmission of zoonotic pathogens from pets to patients at high risk

Personal hygiene

- Wash hands after handling animals or their environment; supervise hand-washing for children less than 5 years of age
- Protect skin from direct contact with animal feces by wearing vinyl or household cleaning gloves or using a plastic bag when cleaning up after a pet
- Avoid contact with animal-derived pet treats
- Promptly wash bites and scratches inflicted by animals
- Do not allow pets to lick open wounds, cuts or medical devices (e.g., intravascular catheters); pets may also be discouraged from licking the faces of young children and immunocompromised patients
- Wear gloves to clean aquariums; do not dispose of aquarium water in sinks used for food preparation
- Ensure playground sandboxes are kept covered when not in use

Types and ages of pets

- Avoid contact with dogs and cats less than 6 months of age or stray animals (avoid acquiring a cat < 1 yr old), particularly in households with very young children or immunocompromised patients
- Avoid contact with animals with diarrhea
- Avoid contact with young farm animals (e.g., petting zoos)
- Avoid contact with reptiles, amphibians, rodents and baby poultry (chicks and ducklings), as well as anything that has been in contact with these animals; such animals should be kept out of the households of high-risk patients
- Reptiles, amphibians, rodents and baby poultry should not be permitted to roam freely through a home or living area and should be kept out of kitchens and food-preparation areas
- Exercise caution when playing with cats to limit scratches; keep cats' nails short (declawing is not recommended)

Stull JW, et al. CMAJ 2015

17

STAPHYLOCOCCUS AUREUS

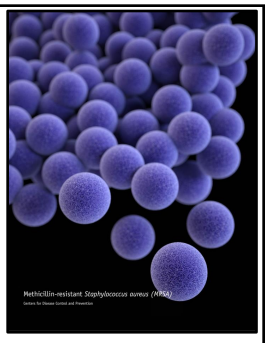

Photo Source: Centers for Disease Control and Prevention

MSSA: 12-14% dogs/cats; 50% dog-owner indistiguishable[1]

MRSA

- **0-9% of cats and dogs[1,2]**
- **RFs: contact children, human hospitals, owned HCW, antimicrobial therapy[3,4]**
- **Concurrent colonization between pets and owners**
- **14% pets in households with MRSA infected person (14% ↓ odds/day after person dx)[5]**
- **Colonization short-term (weeks)**
- **Pets: clinical cases skin and soft tissue infections**

18

[1] Hanselman 2009 [2] Hoet 2013 [3] Lefebvre 2009 [4] Faires. et al. 2010 [5] Morris 2012

METHICILLIN-RESISTANT *STAPHYLOCOCCUS PSEUDINTERMEDIUS* (MRSP)

Antimicrobial resistant bacterium

Predominately in dogs

- Uncommon: cats, people

Rapidly emerging

- 80% resistant to ≥ 7/11 antimicrobials[1]
- 41% dogs with bacterial pyoderma[2]

Photo Source: Pixabay

[1] Perreten, 2010 [2] Beck, 2012

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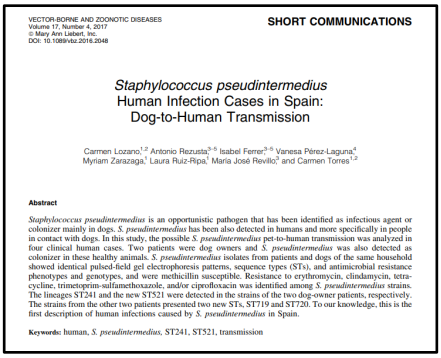
METHICILLIN-RESISTANT *STAPHYLOCOCCUS PSEUDINTERMEDIUS* (MRSP)

Dogs often colonized without clinical signs

- Source of infection

Common cause canine opportunistic infections

Zoonotic (rarely)



VECTOR-BORNE AND ZOONOTIC DISEASES
Volume 17, Number 4, 2017
© Mary Ann Liebert, Inc.
DOI: 10.1089/vbz.2016.2048

SHORT COMMUNICATIONS

Staphylococcus pseudintermedius
Human Infection Cases in Spain:
Dog-to-Human Transmission

Carmen Lozano[1,2] Antonio Rezusta[3–5] Isabel Ferrer[3–5] Vanesa Pérez-Laguna[4] Myriam Zarazaga[1] Laura Ruiz-Ripa[1] María José Revillo[6] and Carmen Torres[1,2]

Abstract

Staphylococcus pseudintermedius is an opportunistic pathogen that has been identified as infectious agent or colonizer mainly in dogs. *S. pseudintermedius* has been also detected in humans and more specifically in people in contact with dogs. In this study, the possible *S. pseudintermedius* pet-to-human transmission was analyzed in four clinical human cases. Two patients were dog owners and *S. pseudintermedius* was also detected as colonizer in these healthy animals. *S. pseudintermedius* isolates from patients and dogs of the same household showed identical pulsed-field gel electrophoresis patterns, sequence types (STs), and antimicrobial resistance phenotypes and genotypes, and were methicillin susceptible. Resistance to erythromycin, clindamycin, tetracycline, trimetoprim-sulfamethoxazole, and/or ciprofloxacin was identified among *S. pseudintermedius* strains. The lineages ST241 and the new ST521 were detected in the strains of the two dog-owner patients, respectively. The strains from the other two patients presented two new STs, ST719 and ST720. To our knowledge, this is the first description of human infections caused by *S. pseudintermedius* in Spain.

Keywords: human, *S. pseudintermedius*, ST241, ST521, transmission

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[1] Weese, 2012 [2]Eckholm, 2012 [3]Nienhof, 2011 [4]Bergstrom, 2012

BARTONELLA SPP (CAT-SCRATCH DISEASE)

Bartonella henselae most common

Many species of *Bartonella*

- *B. clarridgeiae* and *B. vinsonii* subsp. *berkhoffii* transmissible from pets

Feline most important reservoir for zoonotic transmission

Transmitted by cat flea (*Ctenocephalides felis)* feces

Scratches or bites from cats: flea feces enters scratch wound

Photo Source: Centers for Disease Control and Prevention

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CSD: FREQUENCY OF INFECTION

People

- Estimated 22,000 cases diagnosed/yr in US
- Children < 10 yrs (33% of all diagnoses)
- Most often self-limiting benign disease; regional lymphadenopathy

Cats

- Very common (up to 80% seropositive); bacteremia in 25-50% of healthy cats
- Chronic, asymptomatic bacteremia for months to years; esp young cats (< 1 year), flea-infested, strays

Fig. 3. Vascular lesions of bacillary angiomatosis on the right elbow.

Photo Source: M C Madua 2015.

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PREVENTION AND CONTROL

Flea control on cats

Avoid bites and scratches (training)

Wash (soap and water) bites and scratches

Immunocompromised individuals and pet cats

- Flea control!
- Promptly wash bites, scratches; prevent licking wounds
- Avoid higher risk cats: young (< 1 yr), stray, outdoor

Photo Source: Pixabay

23

CLOSTRIDIUM DIFFICILE: DOGS

Identified in healthy dogs (5-10%)[1]

- Same strains in people and dogs
- Dog-human transmission risks unclear
- Healthcare: human to dog

Risk factors

- Human healthcare settings[2]
  - Accepting treats, licking human patients
- Immunocompromised owner[4]
- Recent antimicrobials to dog or owner[4]

Photo Source: Pixabay

24

[1] Clooten, 2007 [2] Lefebvre, 2009 [4] Weese, 2010

EXTENDED-SPECTRUM BETA-LACTAMASE–PRODUCING ENTEROBACTERIACEAE

Healthy and sick dogs

Same strains as people[1]

Pet contact associated with increased risk ESBL colonization[2]

Antimicrobials RF for ESBL acquisition[3]

Interest in raw food diets

[1] Damborg P, 2015 [2]Meyer, 2012 [3]Wedley AL, 2017

25

ATTRIBUTABLE SOURCES: ESBL & CMY

E. coli data from Netherlands

Source attribution model based on prevalence and human exposure

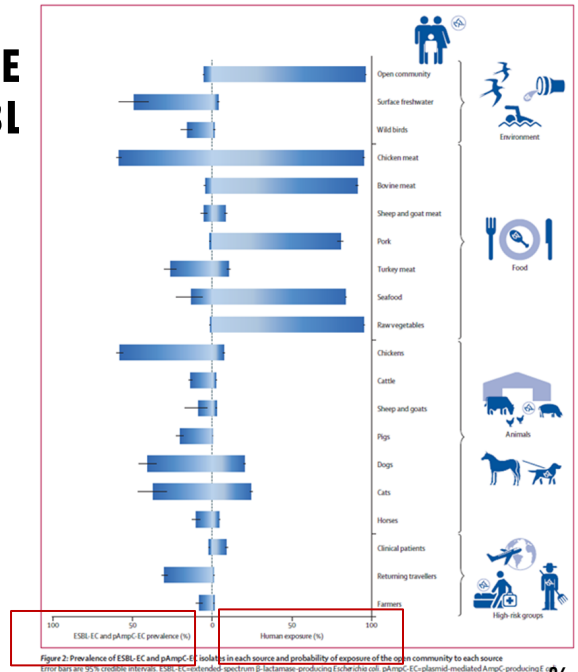

Figure 2: Prevalence of ESBL-EC and pAmpC-EC isolates in each source and probability of exposure of the open community to each source
Error bars are 95% credible intervals. ESBL-EC=extended-spectrum β-lactamase-producing Escherichia coli. pAmpC-EC=plasmid-mediated AmpC-producing E

Mughini-Gras, 2019

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COMMUNITY ACQUIRED ESBL & AMPC ATTRIBUTED TO…

Other people: 60% (40–74)

Food: 19% (7–38)

Dogs: 5% (0.2–16)

Cats: 2% (0.1–8)

Intracommunity spread alone unlikely to be self-maintaining without transmission to and from non-human sources

Mughini-Gras, 2019

27

Reptiles, amphibians, and exotic species very high prevalence

***SALMONELLA* SPP**

Photo Source: Pixabay

(SOME) ANIMAL-ASSOCIATED HUMAN OUTBREAKS, USA (2011-2020)

- Pet store puppies (campylobacteriosis)
- Live poultry (salmonellosis)
- Poultry at slaughter plant (Psittacosis)
- Pet turtles (salmonellosis)
- Pet crested geckos (salmonellosis)
- Pet bearded dragons (salmonellosis)
- Pet frogs (salmonellosis)
- Pet hedgehogs (salmonellosis)
- Pet guinea pigs (salmonellosis)
- Pet rats (salmonellosis)

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Source: Centers for Disease Control and Prevention
(https://www.cdc.gov/healthypets/outbreaks.html)

SALMONELLA SPP

Reptiles, amphibians, and exotic species very high prevalence

Overall uncommon in healthy dogs and cats

- **Raw food diets and treats increase greatly risks (OR=23)[1]**
- **Diarrhea**

[1] Lefebvre, 2008

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RAW MEAT-BASED DIETS AND PETS

Bacterial and protozoal contamination

- *Salmonella, Listeria, E. coli*
- *T. gondii* and *Cryptosporidium*
- Exotic agents (e.g., *Brucella suis*)[1]
- Asymptomatic shedding

FDA Study (2010-2012)

	Salmonella	*Listeria*
Raw Pet Food (n=196)	15 (8%)	32 (16%)
Cooked (dry, semi-moist, treats; n=860)	1 (0.1%)	0

[1] van Dijk, 2018

31

RAW-MEAT BASED TREATS

Outbreaks of human salmonellosis associated with animal-derived pet treats (pig ears)[1]

Recent pig ears outbreak[2]

Photo Source: Pixabay

[1] Clark, 2001 [2] CDC, 2019

32

FED RAW AT HIGHER RISK

Dogs ate raw 11X as likely to shed 3rd generation cephalosporin-resistant *E. coli* [1]

Dogs ate raw poultry 48X as likely to shed ESBL *E. coli* [2]

Dogs ate raw poultry 104X as likely to shed *E. coli* resistant to fluoroquinolones [2]

Dogs ate raw meat 2X as likely to shed ESBL producing *E. coli* [3]

Cats ate raw 32X as likely to shed ESBL-producing bacteria[4]

[1] Schmidt, 2015 [2] Wedley, 2017 [3] Baede, 2015 [4]Baede 2017

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ATLANTIC VETERINARY COLLEGE CLIENTS[1]

(REPORTEDLY FED DURING A TYPICAL WEEK; N=112)

Category	Frequency	Percentage (95% CI)
Dry	99	88.4% (81.0, 93.7)
Treats	64	57.1% (47.4, 66.5)
Raw fruits/vegetables	46	41.1% (31.9, 50.8)
Wet (canned)	36	32.1% (23.6, 41.6)
Cooked homemade	32	28.6% (20.4, 37.9)
Pet chews	27	24.1% (16.5, 33.1)
Rawhides/Raw bones	17	15.2% (9.1, 23.2)
Dietary supplements	14	12.5% (7.0, 20.1)
Commercial raw	7	6.3% (2.5, 12.5)
Raw homemade	9	8.0% (3.7, 14.7)
Other	5	4.5% (1.5, 10.1)

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[1] Evason, 2019

BITE/SCRATCH PATHOGENS

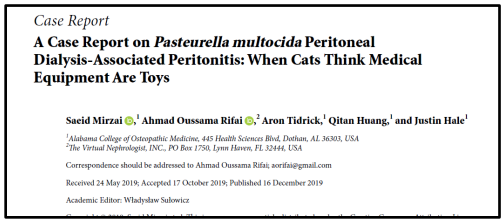
Man has 4 limbs amputated after dog lick leads to severe infection, report says

COMMON ORAL PATHOGENS

Infections typically involve both aerobes and anaerobes

Each animal species carries different resident flora

- **Some high consequence**
  - ***Capnocytophaga canimorsus***
  - ***Pasteurella multocida***
  - **Methicillin-resistant *Staphylococcus aureus* (MRSA)**
  - ***Streptobacillus moniliformis***



Case Report

A Case Report on *Pasteurella multocida* Peritoneal Dialysis-Associated Peritonitis: When Cats Think Medical Equipment Are Toys

Saeid Mirzai,[1] Ahmad Oussama Rifai,[2] Aron Tidrick,[1] Qitan Huang,[1] and Justin Hale[1]

[1]*Alabama College of Osteopathic Medicine, 445 Health Sciences Blvd, Dothan, AL 36303, USA*
[2]*The Virtual Nephrologist, INC., PO Box 1750, Lynn Haven, FL 32444, USA*

Correspondence should be addressed to Ahmad Oussama Rifai; aorifai@gmail.com

Received 24 May 2019; Accepted 17 October 2019; Published 16 December 2019

Academic Editor: Władysław Sułowicz

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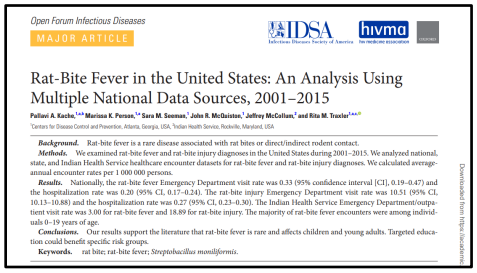
RAT-BITE FEVER



Open Forum Infectious Diseases

MAJOR ARTICLE

Rat-Bite Fever in the United States: An Analysis Using Multiple National Data Sources, 2001–2015

Pallavi A. Kacha,[1,a,b] Marissa K. Person,[1,a] Sara M. Seeman,[1] John R. McQuiston,[1] Jeffrey McCallum,[2] and Rita M. Traxler[1,a,c]

[1]Centers for Disease Control and Prevention, Atlanta, Georgia, USA, [2]Indian Health Service, Rockville, Maryland, USA

Background. Rat-bite fever is a rare disease associated with rat bites or direct/indirect rodent contact.

Methods. We examined rat-bite fever and rat-bite injury diagnoses in the United States during 2001–2015. We analyzed national, state, and Indian Health Service healthcare encounter datasets for rat-bite fever and rat-bite injury diagnoses. We calculated average-annual encounter rates per 1 000 000 persons.

Results. Nationally, the rat-bite fever Emergency Department visit rate was 0.33 (95% confidence interval [CI], 0.19–0.47) and the hospitalization rate was 0.20 (95% CI, 0.17–0.24). The rat-bite injury Emergency Department visit rate was 10.51 (95% CI, 10.13–10.88) and the hospitalization rate was 0.27 (95% CI, 0.23–0.30). The Indian Health Service Emergency Department/outpatient visit rate was 3.00 for rat-bite fever and 18.89 for rat-bite injury. The majority of rat-bite fever encounters were among individuals 0–19 years of age.

Conclusions. Our results support the literature that rat-bite fever is rare and affects children and young adults. Targeted education could benefit specific risk groups.

Keywords. rat bite; rat-bite fever; *Streptobacillus moniliformis*.

Downloaded from https://academic

Streptobacillus moniliformis

Reservoir: rodents (often rat)

Transmission: bites & scratches

- **Other direct & indirect contact (kissing, cage cleaning)**

Normal rat flora (50-100%); no clinical disease

Rare but ↑ frequency with "pocket pet" ownership?

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RBF: DISEASE & PREVENTION

People (2-3 days up to 3 wks after exposure)

- **Fever, joint/muscle pain, rash (soles, palms, extremities)**
- **Rarely endocarditis, meningitis, sepsis**
- **High risk: children, those with high rodent exposure**

Antimicrobials

- **Untreated: 7-13% fatality**

Sean P. Elliott Clin. Microbiol. Rev. 2007;20:13-22

38

AP / *February 25, 2014, 9:13 PM*

Family sues Petco after boy dies from "rat-bite fever"

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ANIMALS & SARS-COV-2

Infected? Infectious?

Experimental/natural infections[1]

- **Dogs**
- **Cats, ferrets, hamsters**
- **Mink**

Virus on fur?

Limited testing

Source: people with COVID-19

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El Masry, et al.. 2020. *Exposure of humans or animals to SARS-CoV-2 from wild, livestock, companion and aquatic animals: Qualitative exposure assessment*. FAO animal production and health,, FAO. https://doi.org/10.4060/ca9959en

Photo Source: Pixabay

Animals that we know can get COVID-19 or that may be able to infect humans as of July 3, 2020

Animal *	Can be infected by COVID-19	Can spread to other animals of the same species	Can spread back to people
Cat	Yes	Yes	Unknown
Ferret	Yes	Yes	Unknown
Hamster	Yes	Yes	Unknown
Dog	Yes, but rarely	No	Unknown
Big cat (tiger, lion)	Yes	Yes	Unknown
Mink	Yes	Yes	Likely
Pig	No	No, because can't be infected	No, because can't be infected
Chicken	No	No, because can't be infected	No, because can't be infected
Duck	No	No, because can't be infected	No, because can't be infected
Fruit bat	Yes	Yes	Unknown
Monkey	Yes	Unknown	Unknown
Mouse	No	No, because can't be infected	No, because can't be infected

* These are general categories and the information may not apply to all species.

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https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks/animals-covid-19.html#a1

ANIMALS AND HEALTHCARE/PUBLIC SETTINGS (SARS-COV-2)

Main risks people (owners, handlers) of pets

Screen handler and pet before entry

- Low-risk (eg no exposure in past 14 days)

Routine COVID-19 measures

- Hand hygiene, not with COVID-19 cases/suspects, mask use for all people
- Limit: closed/crowded spaces, close/continuous contact
- Limit # handlers, single facility

Follow existing (general) recommendations

- Maintain log for contact tracing (who, how long)
- Communication between handler and facility

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INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

SHEA EXPERT GUIDANCE

Animals in Healthcare Facilities: Recommendations to Minimize Potential Risks

Rekha Murthy, MD;[1] Gonzalo Bearman, MD, MPH;[2] Sherrill Brown, MD;[3] Kristina Bryant, MD;[4] Raymond Chinn, MD;[5] Angela Hewlett, MD, MS;[6] B. Glenn George, JD;[7] Ellie J.C. Goldstein, MD;[8] Galit Holzmann-Pazgal, MD;[9] Mark E. Rupp, MD;[10] Timothy Wiemken, PhD, CIC, MPH;[4] J. Scott Weese, DVM, DVSc, DACVIM;[11] David J. Weber, MD, MPH[12]

PURPOSE

Animals may be present in healthcare facilities for multiple reasons. Although specific laws regarding the use of service animals in public facilities were established in the United States in 1990, the widespread presence of animals in hospitals, including service animals to assist in patient therapy and research, has resulted in the increased presence of animals in acute care hospitals and ambulatory medical settings. The role

guidance on the management of AHC in four categories: animal-assisted activities, service animals, research animals, and personal pet visitation. Institutions considering these programs should have policies that include well-organized communication and education directed at healthcare personnel (HCP), patients, and visitors. Appropriately designed studies are needed to better define the risks and benefits of allowing animals in the healthcare setting for specific purposes.

Murthy R, et al. Animals in healthcare facilities: recommendations to minimize potential risks. *Infect Control Hosp Epidemiol.* 2015

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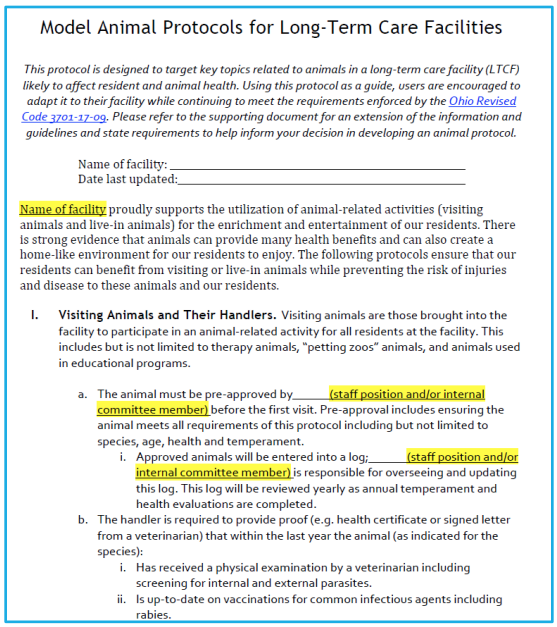

Model Animal Protocols for Long-Term Care Facilities

This protocol is designed to target key topics related to animals in a long-term care facility (LTCF) likely to affect resident and animal health. Using this protocol as a guide, users are encouraged to adapt it to their facility while continuing to meet the requirements enforced by the Ohio Revised Code 3701-17-09. Please refer to the supporting document for an extension of the information and guidelines and state requirements to help inform your decision in developing an animal protocol.

Name of facility: _____
Date last updated: _____

Name of facility proudly supports the utilization of animal-related activities (visiting animals and live-in animals) for the enrichment and entertainment of our residents. There is strong evidence that animals can provide many health benefits and can also create a home-like environment for our residents to enjoy. The following protocols ensure that our residents can benefit from visiting or live-in animals while preventing the risk of injuries and disease to these animals and our residents.

I. **Visiting Animals and Their Handlers.** Visiting animals are those brought into the facility to participate in an animal-related activity for all residents at the facility. This includes but is not limited to therapy animals, "petting zoos" animals, and animals used in educational programs.

a. The animal must be pre-approved by_____(staff position and/or internal committee member) before the first visit. Pre-approval includes ensuring the animal meets all requirements of this protocol including but not limited to species, age, health and temperament.
   i. Approved animals will be entered into a log;_____(staff position and/or internal committee member) is responsible for overseeing and updating this log. This log will be reviewed yearly as annual temperament and health evaluations are completed.
b. The handler is required to provide proof (e.g. health certificate or signed letter from a veterinarian) that within the last year the animal (as indicated for the species):
   i. Has received a physical examination by a veterinarian including screening for internal and external parasites.
   ii. Is up-to-date on vaccinations for common infectious agents including rabies.

http://www.go.osu.edu/nhpets

PREVENTION: FINAL TIPS

Develop/refine protocols for animal interactions

- **Hand hygiene**
- **Exclusion policies – species, illness, recent antimicrobial therapy, preventive care**

Incorporate questioning and prevention advice into well & sick patient visits

Stay up-to-date on zoonotic diseases

- https://www.wormsandgermsblog.com/

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www.webbertraining.com/schedulep1.php

September 17, 2020	REPROCESSING OF CRITICAL FOOT CARE DEVICES Speaker: **Clare Barry**, Infection Control Consultant, Canada, and **Merlee Steele-Rodway**, Canadian Association of Medical Device Reprocessing
September 24, 2020	WATERBORNE PATHOGENS: WHY IS THEIR PROFILE CHANGING? Speaker: **Prof. Syed A Sattar**, Professor Emeritus of Microbiology, University of Ottawa
October 15, 2020	*(FREE Teleclass)* THE VALUE OF CERTIFICATION - "WHAT'S IN IT FOR ME? Speaker: **Sandra Callery**, Certification Board of Infection Control
October 20, 2020	*(European Teleclass)* CAN WE HALVE GRAM-NEGATIVE BLOODSTREAM INFECTIONS? A DEBATE Speaker: **Prof. Jon Otter**, Imperial College Healthcare NHS Trust, and **Martin Kiernan**, University of West London
October 20, 2020	*(FREE ... WHO Teleclass - Americas)* CLEAN HOSPITALS: THE NEXT FRONTIER IN INFECTION PREVENTION Speaker: **Prof. Didier Pittet**, World Health Organization, Geneva **Sponsored by the WHO Infection Prevention & Control Global Unit**


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