

**The Role of Companion Animals in Infection Transmission**  
**Prof. Timothy Landers and Prof. Jason Stull, The University of Ohio**  
**A Webber Training Teleclass**



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**THE ROLE OF COMPANION  
ANIMALS IN INFECTION  
TRANSMISSION**

**Timothy Landers, RN, CNP, PhD**  
College of Nursing

**Jason Stull, VMD, MPVM, PhD, DACVPM**  
College of Veterinary Medicine

Hosted by Paul Webber  
paul@webbertraining.com

www.webbertraining.com

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**Conflict of Interest Statement**

**The presenters declare they have no  
competing interests**

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## Learning Objectives

- **Describe features of the human-animal bond and its implications for human health and infection prevention**
- **Define zoonotic transmission and describe the role of pets in zoonotic outbreaks**
- **Identify key strategies for preventing pet-associated zoonotic transmission in healthcare settings**

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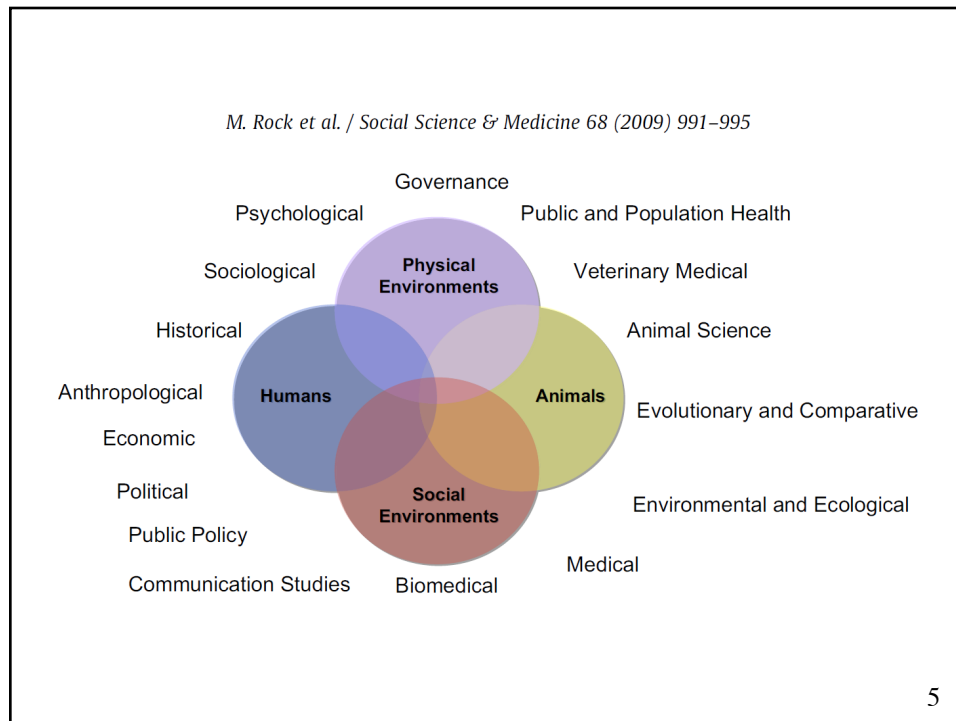


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## **HUMAN-ANIMAL BOND AND ITS IMPLICATIONS FOR HUMAN HEALTH AND INFECTION PREVENTION**

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## Dogs are special

- Co-evolution of dogs and humans
- Historical importance
- Family members
- Usefulness to humans
- Emotional and psychological important
- Social and cultural taboos
- Human health benefits

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## **Human-Animal Bond**

- **Often strong bonds between pets and owners**
  - **Adults with HIV: source of support, protect against loneliness<sup>1</sup>**
  - **Adult cancer patients: high attachment, provide health benefits<sup>2</sup>**
  - **Immunocompromised children<sup>3</sup>**

<sup>1</sup> Siegel 1999

<sup>2</sup> Larson 2010

<sup>3</sup> Stull 2014

## Human-Animal Bond

- **Relationship between people and their pets**
- **HAI = human-animal interaction**
  - Encompass human-animal bond from pet ownership, recreation (horseback riding), animal husbandry, therapy

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## Human-pet dog interactions

- Types of interactions
  - Determinants of interactions
  - Characteristics of interactions
- Frequency
- Social lives of dogs and dog owners
- Interest in human benefits of interacting with animals

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## Human-Animal Bond

- **Distress & social isolation: ↓ health**
- **Often strong bonds pets and owners**
  - ↓ stress, anxiety, loneliness, depression<sup>1</sup>
  - ↓ risk cardiovascular disease<sup>2</sup>
  - Children: better social skills, self-esteem, empathy<sup>3</sup>



<sup>1</sup> Friedmann 2009

<sup>2</sup> Patronek 1993 <sup>3</sup> Melson 1997

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## Human-Pet Scales

- Lexington Attachment to Pets Scale (LAPS)
- Pet Attitude Scale (PAS)
- People and their pets instrument
- Pet Relationship Scale
- Monash Dog Ownership Relationship Scale (MDORS)

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5. My pet helps me get through tough times  
Never sometimes usually always
6. My pet gives me a reason for getting up in the morning  
Strongly disagree disagree agree strongly agree
7. My pet is like a member of the family  
Strongly disagree disagree agree strongly agree
8. My feelings towards other people are affected by how they react to my pet  
Never sometimes usually always
9. My pet knows when I'm upset and tries to comfort me  
Never sometimes usually always
10. My pet enjoys my company  
Never sometimes usually always
11. My pet relies on me for love and care  
Never sometimes usually always
12. I love my pet  
Strongly disagree disagree agree strongly agree
13. I think about my pet when it is not with me  
Never sometimes usually always
14. I do not like leaving my pet in someone else's care if I go interstate or overseas  
Strongly disagree disagree agree strongly agree
15. I have got to know other people through having this pet.  
Never occasionally quite often frequently

OPRS: citation available

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## Physiologic Benefits

- **Ownership, AAA & AAT**
- **“Low” and “high” stress situations**
- **Variety of species**
- **↓ health-care expenditures**
- **Owned and loaner pets**
  - **Dog-walking program (72% adherence)**
- **Some document benefits for animals involved**
  - **↓ blood pressure**

Benefit	Population	Pet Ownership (O), AAA, or AAT
Decreased cortisol levels	Adults with own or unfamiliar pet	O
Decreased blood pressure and heart rate/cardiovascular reactivity	Adults	O, AAA
Increased parasympathetic nervous system activity	Adults	O, AAA
Increased phenylethylamine, prolactin, oxytocin, serotonin	Adults with own or unfamiliar pet	O, AAA
Decreased pain, analgesia use, anxiety, and epinephrine levels	Adults	AAA
Decreased cholesterol and triglyceride levels	Adults	O
Better 1-year survival after myocardial infarction	Adults	O
Buffered blood pressure response to stress in hypertensive patients treated with lisinopril	Adults	O
Fewer patient-initiated physician visits	Elderly	O
Improved self-perceived health	Elderly	O
Increased physical activity levels and weight loss with dog walking	Adults and elderly	O, AAA
Increased longevity	Elderly	O
Increased food intake (with aquarium watching)	Elderly	AAA
Decreased muscle spasticity	Children with cerebral palsy	AAA, AAT

## Psychosocial Benefits

- **“High-risk” groups**
  - **Nursing home**
    - **↑ prosocial behavior in residents**
    - **↑ positive interactions in staff**
  - **AIDS**
  - **Children autism**
- **Interactions/perceived likability**

Benefit	Population	Pet Ownership (O), AAA, or AAT
Decreased depression	Elderly, patients with AIDS	O, AAA, AAT
Decreased anxiety	Adults and patients with psychiatric disorders	O, AAA, AAT
Decreased loneliness	Adults, elderly	O
Improved morale	Elderly	O
Fun, relaxation	Elderly	O
Unconditional love and support	Elderly, cancer patients	O
Pets perceived as family members	Adults	O
Improved “prosocial” behaviors in nursing home	Elderly	AAA, AAT
Increased social interaction (pets as catalysts)	Adults	O, AAA, AAT
Increased interaction between staff and nursing home residents	Adults	AAA
Facilitators of attachment	Children	O

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<http://thehydrant.files.wordpress.com/2012/06>

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## Children With Pets

- **Improved**
  - Social skills
  - Self-esteem
  - Empathy
- **As likely to talk to their pets about their emotions and secret experiences as with their siblings**



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## Immunocompromised

- **Mental & physical isolation**
- **HIV-infected:**
  - Pet as family member
  - Source of support and affection
  - Protect against loneliness
  - Pet-owners with AIDS less depression than non-pet owners
- **Cancer patients:**
  - High level of attachment to pets
  - Having a pet provided health benefits (67%)
- **Lung transplant recipients**
  - Pets ownership associated better quality of life



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## Health Benefits

- **Distress and social isolation → negative health effects**
- **Depression and anxiety**
  - ↑ catecholamine release
  - ↑ corticosteroids
  - ↓ myocardial perfusion (heart blood flow)
- **Improve health**
  - Improve psychosocial status
  - Reduce distress and stress responses
  - Moderate social interaction

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**ROLE OF PETS IN ZOO NOTIC  
TRANSMISSION &  
OUTBREAKS**

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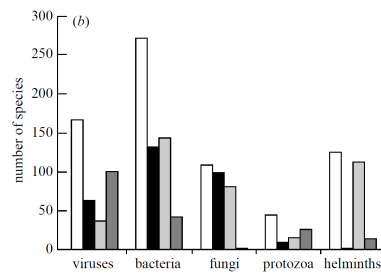
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## Zoonoses

- Naturally transmitted from animals to people
- Of 1,415 species pathogenic to people
  - 61% zoonotic
  - 75% emerging pathogens zoonotic



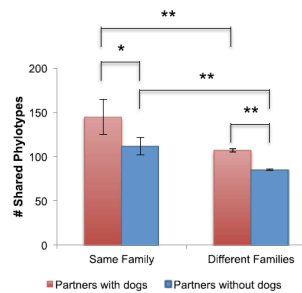
<sup>1</sup> Taylor 2001



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## Share and Share Alike<sup>1</sup>

- Many factors shape human microbial community
  - Household members
  - Children
  - Dogs
- Household members more alike, esp. if dogs
- Dog-owners shared more skin microbiota with own dog



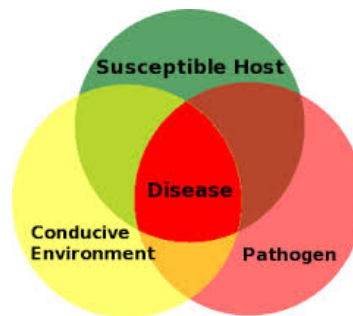
<sup>1</sup> Song 2013

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### Elements for Effective Pet-Human Transmission

- **Pathogens with a broad host range**
- **Opportunities for exposure**



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### Pet-Related Risk Factors for Zoonotic Disease

- **Species**
- **Diet**
- **Age**
- **Immunity**
- **Prior antibiotic use**
- **Opportunities for transmission**
- **Opportunities for exposure**
  - **Source, travel**
  - **Management**
  - **Hospitalization**
  - **Contact with high-risk people**

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## Pet-Associated Disease

- 70+ pathogens of “pets” transmissible to people
- Pets often subclinical shedding
- Emerging & reemerging diseases
- Animal and human reservoirs
  - Dogs visiting human healthcare facilities<sup>1</sup>
    - *C. difficile* (OR=2.4)
    - MRSA (OR=4.7)

<sup>1</sup>Lefebvre 2009

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## 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

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**Pet-associated Infections of Greatest Concern**

- *Bartonella* spp.
- *Campylobacter* spp.
- *Capnocytophaga canimorsus*
- *Cryptosporidium* spp.
- Dermatophytes
- *Giardia lamblia*
- *Lymphocytic choriomeningitis virus*
- MDROs (e.g., ESBLs, MRSA)
- *Pasteurella* spp.
- *Salmonella* spp.
- *Toxoplasma gondii*

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*Staphylococcus aureus*

- Common human pathogen
- Uncommon canine pathogen
- Colonizes approx. 30% of US residents
- Approx. 10% of dogs colonized
- Can contain resistance & virulence factors

*Staphylococcus pseudintermedius*

- Common canine pathogen
- Uncommon human pathogen
- Can contain resistance & virulence factors
- Colonization in dogs and humans not well studied

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## Disease Attributable to Pets

- **Poorly understood**
  - Most not reportable
  - Numerous exposure sources
  - Subclinical carriage/shedding
  - Reactivation during immunosuppression
- **Thought to be low<sup>1,2</sup>**
- **Risk not uniform**
  - Species, age, immune status
  - High morbidity, mortality for some individuals

<sup>1</sup> Angulo 1995

<sup>2</sup> Glaser 1994

## Health

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### The New York Times

### Tie to Pets Has Germ Jumping To and Fro

By BRENDA GOODMAN

For decades, the drug-resistant germ called MRSA was almost exclusively a concern of humans, usually in hospitals and other health care settings.

But in recent years, the germ has become a growing problem for veterinarians, with an increasing number of infections turning up in birds, cats, dogs, horses, pigs, rabbits and rodents. And that, infectious-disease experts say, is becoming a hazard to humans who own or spend time with these animals.

"What's happened for the first time that we've noticed is that you're getting flip back and forth," said Scott Shaw, head of the infection control committee at the Cummings School of Veterinary Medicine at Tufts University.

It is unknown how often pets play a role in human infections by methicillin-resistant *Staphylococcus aureus* and vice versa; physicians and veterinarians do not routinely trace such infections to their source. When such scientific sleuthing is conducted, however — usually in the case of multiple or recurring in-

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Author, year	Setting	Findings
Faires, et.al., 2009 (16)	US and Canada	22 households in which pet had MRSA infection 10/56 (27.3%) of humans and 2/24 (8.3%) of non-infected dogs were colonized 8 households with recurrent human MRSA infections 1/16 (6.3%) of humans and 2/21 dogs (9.5%) were colonized Humans and dogs shared same PFGE strain
Weese, 2006 (11)	U.S. and Canada	Contacts of 6 index dogs with MRSA infection were evaluated. 14/88 (16%) of human contacts were positive, one secondary infection was identified (in a non-index dog).
Baptiste, et. al., 2005 (17)	Small animal hospital, UK	55 dogs from hospital were MRSA negative 3 dogs with clinical infections had identical strains to 3/11 (27%) colonized staff
Van Duijkeren, et.al., 2004 (18)	Nursing home outbreak, Netherlands	Investigation of 48 patients and 15 nurses who were MRSA colonized After unsuccessful decolonization of one nurse, daughter and dog identified as MRSA colonized
Enoch, 2004 (19)	Pet therapy dog, UK	Pet therapy dog reported as MRSA-negative before visiting hospital ward, but positive after visiting
Manian, 2003 (10)	Case report, US	Patient and wife had recurrent MRSA infections with unsuccessful decolonization Therapy was successful only after treatment of dog Patient-dog isolates were similar based on PFGE

Table 1. Studies on the role of pets in SAMRSA colonization and infection.

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"Tie to Pets has germ jumping to and fro" New York Times	A well known expert "estimated that relatively few animals were infected..."In the grand scheme of things with MRSA, pets are a pretty minor thing," he said."
"Can snuggling up to your pet give you MRSA?" Daily Mail, UK	"However, all experts agree there is no need to give up your beloved pet." A local veterinarian who treated a MRSA-infected cat saated, "the cat would have picked it up from a human carrier. It wasn't the cat's fault."
"Pets can give owners love, joy – and staph" The Columbus Dispatch	According to one expert, "dogs and cats are getting it from people." A national expert stated, "I don't want people to thing they're going to get MRSA from their pets. More commonly, people get it because they're carrying it themselves."
"Beware of the dog: you may catch MRSA." The Times Online	"Risks of infection from dog to Man at present are low." According to a local animal behavioralist, "you are more likely to catch a disease from a child than a dog."
"MRSA in pets shouldn't be a major concern." KJCT News, Grand Junction, CO	A local expert stated that MRSA in animals is "not that prevalent...so you know, I don't think people need to become frightened that if they touch a dog or a dog touches them that they're all of the sudden going to get this horrible bacterial disease."

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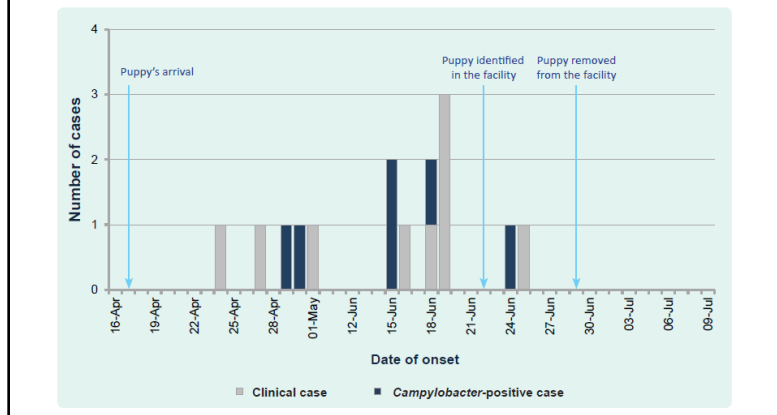
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- *Cryptosporidium* spp.
- Dermatophytes
- *Giardia lamblia*
- *Lymphocytic choriomeningitis virus*
- MDROs (e.g., ESBLs, MRSA)
- *Pasteurella* spp.
- *Salmonella* spp.
- *Toxoplasma gondii*

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## Campylobacter Outbreak<sup>1</sup>

Figure 1. Suspected animal-to-human outbreaks of *Campylobacter* gastroenteritis in an Australian aged-care facility, 2012



<sup>1</sup> Moffatt 2014

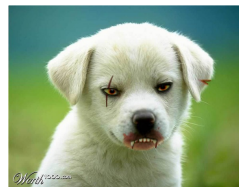
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Higher Risk Animals:  
Young Dogs/Cats (< 6 months)

- Higher prevalence of pathogens
  - *Campylobacter* spp.
  - Hook and roundworms (e.g., *Toxocara*)
  - *Bartonella henselae*
- RF for human disease
  - Campylobacteriosis
    - <3yrs: puppy ownership (OR=17)<sup>1</sup>
    - Adults: ↑ risk with puppy ownership<sup>2</sup>
    - Any age dog with diarrhea<sup>3,4</sup>



<sup>1</sup>Tenkate, 2001    <sup>2</sup>Gras, 2013    <sup>3</sup>Fullerton 2007    <sup>4</sup>Gillespie 2003

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## Higher Risk Animals: Reptiles & Amphibians

- Ex: Turtle, lizard, snake, frog, salamander
  - High prevalence *Salmonella*
  - RF human salmonellosis
    - 6-11% all cases<sup>1</sup>
    - *Salmonella* “travels” – hand hygiene, environmental disinfection
  - Feeder rodents contaminated/ colonized with *Salmonella*

**PEDIATRICS**  
OFFICIAL JOURNAL OF THE AMERICAN ACADEMY OF PEDIATRICS

<sup>1</sup> Mermin 2004

US Outbreak of Human *Salmonella* Infections Associated With Aquatic Frogs,  
2008–2011  
Shauna L. Mettze-Zarecki, Sarah D. Rosen, Julia Hall, Jill Vaeger, Kate Lujan, RN  
MPH, Marguerite Adams-Cameron, Kim Wimpfinger Quinn, Rita Brenden, Gwen  
Biggerstaff, Vincent E. Hill, Karl Shokes, Nancy Marie Garrett, Paul C. LeBon, Casey  
Barton Behravesh, Samir V. Sodha and on behalf of the *Salmonella* Typhimurium  
Outbreak Investigator Team  
*Pediatrics* 2013;131(7):e204 originally published online March 11, 2013;  
DOI: 10.1542/peds.2012-2031

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## Higher Risk Animals: Rodents

- Ex: gerbil, hamster, guinea pig, mouse
  - Increased prevalence
    - *Salmonella*
    - Lymphocytic choriomeningitis virus (LCMV)



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## Higher Risk Animals: Exotics

- Ex. Chinchilla, hedgehog
  - High prevalence
    - *Salmonella*
    - Other zoonotic pathogens?

### Notes from the Field

#### Multistate Outbreak of Human *Salmonella* Typhimurium Infections Linked to Contact with Pet Hedgehogs — United States, 2011–2013

CDC is collaborating with the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) and state health departments to investigate an outbreak of human *Salmonella* Typhimurium infections with an indistinguishable pulsed-field gel electrophoresis pattern linked to contact with pet hedgehogs. This outbreak strain is historically rare, with only one to two cases reported via PulseNet (the national molecular subtyping network for foodborne disease surveillance) annually since 2002. Since 2011, an increasing number of cases have been detected. PulseNet identified 14 human isolates in 2011, 18 in 2012, and two in 2013.

Since January 2012, a total of 20 persons infected with the outbreak strain of *Salmonella* Typhimurium have been reported from eight states: Alabama (one), Illinois (one), Indiana (one), Michigan (three), Minnesota (three), Ohio (three), Oregon (one), and Washington (seven). Illness onset dates ranged from December 26, 2011, to December 31, 2012. The median patient age was 13 years (range: <1–91 years); 55% of patients were female. Four patients were hospitalized. One death associated with *Salmonella* infection has been reported. Fourteen out of 15 patients (or their proxies) reported direct or indirect contact between the patient and a hedgehog during the week before illness onset. The hedgehogs were purchased from vari-

## Higher Risk Animals: Young Farm Animals

- Ex. Chicks, calves, piglets, lambs, goat kids
  - High prevalence
    - *Salmonella*
    - *Cryptosporidium*
    - *Campylobacter*
    - *Clostridium difficile*
    - *E. coli* O157

### Notes from the Field

#### Multistate Outbreak of *Salmonella* Infantis, Newport, and Lille Infections Linked to Live Poultry from a Single Mail-Order Hatchery in Ohio — March–September, 2012

In early 2012, three clusters of human *Salmonella* infections were identified through PulseNet, a national network of public health and food regulatory agency laboratories coordinated by CDC that subtypes disease-causing organisms. Initial investigations indicated many of the ill persons in these three clusters had contact with live poultry (e.g., chicks and ducklings) from a single mail-order hatchery; therefore, the three investigations were merged. During March 1–September 24, 2012, a total of 195 persons infected with the outbreak strains of *Salmonella* serotypes Infantis, Newport, and Lille were reported from 27 states.

Among persons infected, 64 (33%) of 194 were aged ≤10 years; the age of one infected person was unknown. Seventy-nine (79%) of 100 ill persons who were interviewed reported contact with live poultry in the week before illness. Among 39 ill persons who purchased live poultry from the mail-order hatchery and who provided a reason for their purchase, all reported purchasing live poultry for backyard flocks to produce eggs or meat, or to keep as pets. Birds were

## Risk Factors: Pet's Diet

- **Dogs fed raw eggs or meat**
  - 6x more likely to shed *Salmonella*<sup>1</sup>
- **Outbreak: human salmonellosis associated with pig ear treats<sup>2</sup>**



<sup>1</sup> Leonard 2010

<sup>2</sup> Clark 2001

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## Opportunities for Transmission

- **Pets often members of households**
- **Frequent pet contact by non-pet owning<sup>1</sup>**
- **Ownership and species owned similar for higher-risk people**
- **Non-home locations**
  - Nursing homes, hospitals
  - AAT, AAI

<sup>1</sup> Stull 2013

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## Opportunities for Transmission

- **Home high-risk practices frequent<sup>1</sup>**
  - Lick faces several times/wk (24%)
  - Fed high-risk foods (28%)
- **Dogs visiting health-care facilities<sup>1</sup>**
  - $\geq 1$  zoonotic agent 80% of therapy dogs<sup>1</sup>
    - *Clostridium difficile*
    - MDR *Escherichia coli*
    - *Salmonella*
  - Licked patients or accepted treats increased risk for MRSA and *C. difficile*

<sup>1</sup>Stull 2014    <sup>2</sup>Lefebvre 2009

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## Opportunities for Transmission

- **Of 90 therapy dog handlers<sup>1</sup>**
  - 20% used no infection control measures
  - 40% could not name a zoonotic disease
  - 79% allowed their dogs to lick patients



<sup>1</sup>Lefebvre et al. 2006

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**KEY STRATEGIES FOR PREVENTING  
PET-ASSOCIATED ZOO NOTIC  
TRANSMISSION**

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**Overview of recommendations**

- **Understand context!**
  - **Benefits vs. risks of animal contact**
- **Hand hygiene**
- **Variety of interactions**
  - **Human-animal-environment**
- **Types and ages of animals**
- **Pet health and husbandry practices**

<sup>1</sup> Lefebvre 2008 <sup>2</sup> Avery 2009

<sup>3</sup> Hemsworth 2006

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# Hand hygiene

- Patients, visitors and HCWs before and after each animal contact
- Portable ABHR
- Follow facility's protocols

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# Environmental controls

- Disposable, impermeable barrier if animal placed on bed
- Routine cleaning after visits



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## **Personal Hygiene**

- **Patients not eating/drinking during pet visit**
- **Do not allow pets to lick patients/staff (esp. faces)**
- **Allow feeding (treats) only if important**
- **No pet contact with invasive devices, open or bandaged wounds, surgical incisions or other breaches in the skin, or medical equipment**
- **Report and promptly wash bites and scratches**

Source: <http://www.kidney.org.uk/> 55

## **Animal Contact and Husbandry Recommendations**

- **Existing Guidelines**
  - **AAIs<sup>1</sup>**
  - **Specific conditions<sup>2,3</sup>**
- **Benefits vs. risks of animal contact**
- **Additional attention to**
  - **Personal hygiene**
  - **Types and ages of animals**
  - **Pet health and husbandry practices**

<sup>1</sup> Lefebvre 2008 <sup>2</sup> Avery 2009

<sup>3</sup> Hemsworth 2006

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**AJIC** major articles

**Guidelines for animal-assisted interventions in health care facilities**

Writing Panel of the Working Group: Sandra L. Lefebvre, DVM, PhD,<sup>a</sup> Gail C. Golab, PhD, DVM,<sup>b</sup> E'Lise Christensen, DVM,<sup>c</sup> Louisa Castrodale, DVM, MPH,<sup>d</sup> Kathy Aureden, MS, CIC,<sup>e</sup> Anne Bialachowski, RN, MS, CIC,<sup>f</sup> Nigel Gumley, DVM,<sup>g</sup> Judy Robinson,<sup>h</sup> Andrew Peregrine, DVM, PhD,<sup>a</sup> Marilyn Benoit, RN,<sup>i</sup> Mary Lou Card, RN, CIC,<sup>j</sup> Liz Van Horne, RN, CIC,<sup>k</sup> and J. Scott Weese, DVM, DVSc<sup>a</sup>  
Schaumburg and Elgin, Illinois; New York, New York; Anchorage, Alaska; Guelph, Burlington, Ottawa, Hamilton, London, and Toronto, Ontario, Canada

Many hospitals and long-term care facilities in North America currently permit animals to visit with their patients; however, the development of relevant infection control and prevention policies has lagged, due in large part to the lack of scientific evidence regarding risks of patient infection associated with animal interaction. This report provides standard guidelines for animal-assisted interventions in health care facilities, taking into account the available evidence. (*Am J Infect Control* 2008;36:78-85.)

American Journal of Infection Control Volume 36, Issue 2, Pages 78–85, March 2008

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## General Concepts

- **Pathogen screening deemphasized**
  - What pathogens?
  - How often (single point-in-time)
  - May be indicated in situations
- **Emphasis on infection control practices**
- **Records for tracing if needed**
- **Patient-owned vs. AAI/live-in**
  - **Patient: domestic companion animals; lenient if no other patient contact**
  - **AAI/live-in: restrictions important**

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## Facility Program

- **Animal liaison (visits, housed)**
- **Animal policies (e.g., AAI)**
  - Part of formal program
  - Temperament testing
  - Evaluation by liaison; follow and revoke if problems
  - Training for handler (e.g., zoonoses, health, confidentiality)
- **Inclusion criteria**

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## Animal Contact?

- **Immunocompromised patients assessed by health care provider to give OK and any limitations**
- **Identify patients with**
  - Animal phobias
  - Lack of interest
  - High risk
- **Appropriate locations**
  - Escort by hospital personnel
  - Restrained by leash or cage

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## Restricted Areas

- **Food preparation areas**
- **Operating rooms**
- **Neonatal nurseries**
- **Critical care**
- **Isolation**
- **High-risk areas with caution(e.g., dialysis, burn units)**

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## Types and Ages of Animals

- **No high-risk animals**
  - **Species**
  - **Ages (cats/dogs > 1 yr)**
  - **Source: none recently from animal shelter, pound**

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## Pet Health and Husbandry

- **No raw foods, chews, or treats of animal origin within the past 3 months**
- **Annual health evaluation (veterinarian)**
- **Vaccinations current (rabies)**
- **Ectoparasite and endoparasite parasite control program**



## Pet Health

- **No recent (i.e. in past wk)**
  - Vomiting/diarrhea
  - Sneezing/coughing (susp infection)
  - Urinary or fecal incontinence
  - Antimicrobials (nontopical) or immunosuppressive doses of medications
  - Infections (e.g., open wounds, skin/ear)
- **Before visit**
  - Brush/comb  $\pm$  bathe
  - Nails short

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**The Role of Companion Animals in Infection Transmission**  
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**A Webber Training Teleclass**

## Other Considerations

- **Patients (and medical personnel) often limited knowledge pet-associated disease<sup>1,2</sup>**
  - Risks
  - Reduction methods
- **Patient pet contact infrequently assessed<sup>1,2</sup>**
- **Veterinary counterparts useful resource, but limited interaction<sup>3</sup>**

<sup>1</sup> Stull 2013    <sup>2</sup> Stull 2014    <sup>3</sup> Hill 2012

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## Resources: Pet-Associated Disease

The screenshot shows the 'Worms & Germs Blog' website. The main content area is titled 'INFORMATION SHEETS FOR PET OWNERS' and includes a table of resources. The table lists various diseases and the species they affect. A small image of a dog is visible on the right side of the table.

Animals	Diseases	Other
Chick	Salmonella	Other Diseases
Cat	Giardia	Endocarditis
Cattle	Toxoplasmosis	Chlamydia
Humans	Leishmaniasis	Black Death
Dogs	Chlamydia felis	Prion Disease
Primates	Cryptosporidium	Herpesvirus Equine
Porcine	Brucella	
Other Great Felines	Brucella	
Reptiles	Brucella	
Birds	Brucella	
Canary	Brucella	
Other Birds	Brucella	
Other Mammals	Brucella	
Other Reptiles	Brucella	
Other Amphibians	Brucella	
Other Fish	Brucella	
Other Invertebrates	Brucella	
Other	Brucella	

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# The Role of Companion Animals in Infection Transmission

## Prof. Timothy Landers and Prof. Jason Stull, The University of Ohio

### A Webber Training Teleclass

## Resources: Pet-Associated Disease



**Safe Pet Guidelines**

*A Comprehensive Guide for Immunocompromised Animal Guardians*

[pawssf.org](http://pawssf.org)

Elsevier

**Pet ownership in immunocompromised children—A review of the literature and survey of existing guidelines**

S. Hemsworth<sup>1</sup>, B. Pitzer

OncoKey Unit, Royal Liverpool Children's NHS Trust, Eaton Road, Liverpool, UK



**Turtles for Dummies**

**Pet Turtle Facts**

**Getting A Turtle**

**Caring For Your Turtle**

**Worms & Germs**

**Worms and Germs Blog**

[wormsandgermsblog.com](http://wormsandgermsblog.com)

**HUMAN-ANIMAL MEDICINE**

Clinical Approaches to Zoonoses, Toxicants and Other Shared Health Risks

PETER M. RABINOWITZ  
LISA A. CONTI

**Companion Animal Zoonoses**

J. SCOTT WEESE & MARTHA FILFORD

**The Veterinary Journal**

Journal homepage: [www.elsevier.com/locate/vetj](http://www.elsevier.com/locate/vetj)

**Immunocompromised patients and their pets: Still best friends?**

Daniel Elad<sup>1</sup>

The Hebrew Veterinary Institute, P.O. Box 12, Ben Dagan 50226, Israel

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**What can I do if my animal is MRSA positive?**

Talk to your veterinarian, who can help you to determine the best approach to follow with your animal based on the health risk for yourself, your family, and the animal. **You do not need to get rid of your animal.** Remember that healthy people or animals will rarely develop disease under normal circumstances. In addition, MRSA is highly adapted to humans, but not to other animal species; therefore, if your animal is MRSA positive, it is possible that the original source of infection for the animal could be you or somebody in your household. Talk with your health care provider if you have any questions or concerns about yourself or your family.

**What can I do to protect myself and my family?**

In every case, you should follow the instructions of your veterinarian, as well as the basic precautions indicated below to minimize or avoid the transmission of these bacteria:

- Wash your hands with warm running water and soap for at least 15 seconds after playing or handling your animals, as well as after cleaning their cages, water bowls, toys, or other equipment.
- Keep cuts and scrapes clean and cover them with bandages, especially when handling your animals.
- Do not share food with your pet and avoid sharing personal items, such as towels.
- Do not allow licking of your face or wounds.
- Avoid direct contact with cuts and scrapes on your animal and use gloves to clean and treat them.
- Do not sleep with your dog if you are an immunocompromised or a high-risk person.
- Take extra personal hygiene precautions when handling ill animals.

**What is the Veterinary Teaching Hospital doing about MRSA?**

The Ohio State University Veterinary Teaching Hospital (VTH) has established specific protocols to handle and manage MRSA positive animals and their environments. In addition, the VTH has established a surveillance program, in which routine samplings of the hospital environments and patients are performed. The main objective is to prevent and control the transmission of MRSA in order to protect our patients and clients as well as the students and personnel at the VTH.

Brochure content reviewed and approved by the College Infectious Disease Committee

**About the College of Veterinary Medicine**

The Ohio State University College of Veterinary Medicine is ranked 9th in the nation among veterinary schools, according to the 2009 U.S. News & World Report's "Best Graduate Schools." The college includes more than 1,000 faculty, staff, and students in the departments of Veterinary Biostatistics, Veterinary Clinical Sciences, and Veterinary Preventive Medicine. The Veterinary Teaching Hospital is a comprehensive referral center and is among the largest in the world, with more than 25,000 large and small animal patients each year. In addition, the college operates a nationally recognized large-animal ambulatory practice and teaching unit in Marysville, Ohio, and a Food-Animal Health Research Program in Wooster at the Ohio Agricultural Research and Development Center. More information about the College of Veterinary Medicine can be found at [vet.osu.edu](http://vet.osu.edu).

**College of Veterinary Medicine**  
**Veterinary Teaching Hospital**

127D Veterinary Medicine Academic Building (VMAB)  
1900 Coffey Rd.  
Columbus, OH 43210  
(614) 292-9452  
[vet.osu.edu](http://vet.osu.edu)

Hoet: citation available

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## Zoonoses and the Public

- **Low level of knowledge**
- **Low recall of receipt of information**
- **Comfortable with current level of knowledge (60-70%)**
- **Frequent high-risk practices**
- **Minimally concerned about zoonoses**
- **Same for high-risk individuals**

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## Improving Physician– Veterinarian Interaction: Why Do We Need It, How Can We Do It?

Leonard C. Marcus, VMD, MD  
Newton, Massachusetts

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## Reach out to Veterinary Colleagues

- **Survey of Connecticut health professionals**
  - **Comfortable advising clients about zoonoses**
    - 45% of veterinarians
    - 6% of pediatricians
  - **Ranking of responsibility for educating public re: zoonoses prevention**

<sup>1</sup> Gauthier 2002

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## Reach out to Veterinary Colleagues

- **Limited communication<sup>1</sup>**
  - **100% physicians never/rarely contacted veterinarians**
  - **97% veterinarians never/rarely contacted physicians**
- **Veterinarians unaware of clients' immune status**
  - **58% told about status (children with cancer)<sup>2</sup>**
  - **66% never discussed clients' health<sup>3</sup>**

<sup>1</sup> Hill 2012

<sup>2</sup> Stull unpublished

<sup>3</sup> Grant 1999

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THE OHIO STATE UNIVERSITY

## Summary

Pets provide **important health benefits**

Disease risks is **modifiable** in most cases

Identify **higher risk** pet husbandry practices

**Resources and guidance** available

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**Coming Soon**

*December 2 (British Teleclass)*

**UPDATE OF CLOSTRIDIUM DIFFICILE INFECTIONS IN EUROPE**

Prof. Ed Kuijper, Leiden University Medical Center, Germany

*December 4* **CHEMOTHERAPY – HEALTH, SAFETY, AND WASTE MANAGEMENT ISSUES**

Ed Krisiunas, WNNW International, Connecticut

*December 11* **ENVIRONMENTAL CLEANING IN HEALTHCARE: IS MONITORING OF CLEANING COMPLIANCE REALLY NEEDED?**

Dr. Michelle Alfa, Diagnostic Services of Manitoba

[www.webbertraining.com/schedule1.php](http://www.webbertraining.com/schedule1.php)

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