

The Development of Zoonotic Disease Prevention Education Materials for Animal Shelter Workers in Kansas

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Background:

- Grew up in the suburbs of Philadelphia, PA
- Graduated with a BS in Biology and minor in Economics from Shippensburg University of Pennsylvania
- Established interest in companion animal veterinary medicine



Background:

- Dual degree student (DVM/MPH)
 - DVM obtained in Spring '21
 - MPH anticipated in Summer '21
- Infectious diseases and zoonoses emphasis
- Rx One Health participant
 - 2017 Summer program in Rwanda and Tanzania
- Applied Practice Experience (APE)
 - Address a local One Health concern: zoonotic disease education in Kansas animal shelters



Agency:

- Shelter Medicine Program at the Kansas State University Veterinary Health Center (VHC)
 - Works with a set of “Shelter Partners” throughout Kansas
 - Provides spay and neuter surgeries to shelter partners free of cost
 - Uses small fleet of mobile surgery suites
 - Allows veterinary students to practice high quality high volume spay and neuter (HQHVSN) under the supervision of mentor veterinarians
 - Periodically works on educational initiatives to help local shelters improve shelter management



Project Components:

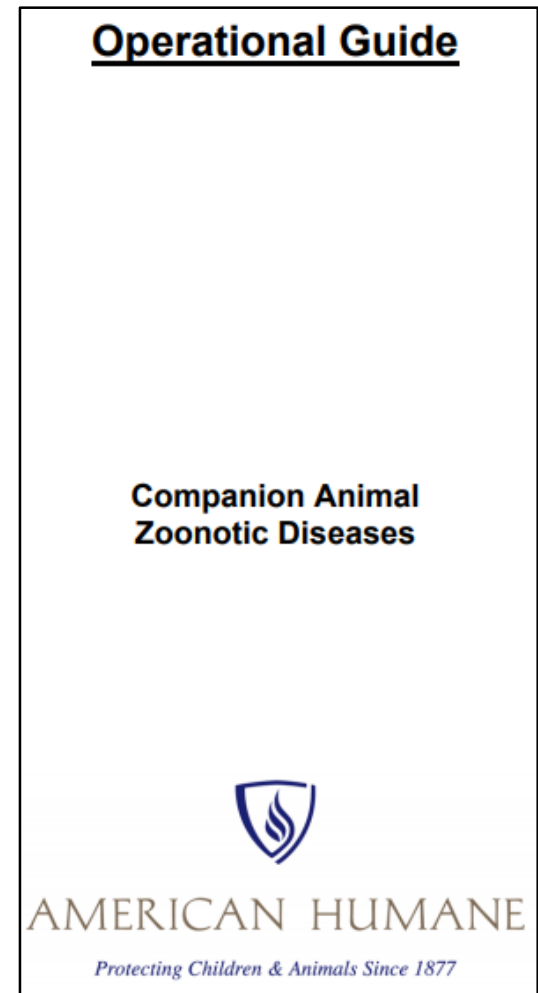
- Part 1: Literature review

Establishing need:

- Literature review:
 - Is there a need and desire for zoonotic disease education among animal shelter workers?
 - Which zoonotic diseases present an increased risk to animal shelter workers?
 - Which zoonotic diseases are already familiar to animal shelter workers?

Existing Resources:

- Complex primary literature
- Humane Society Zoonotic Disease Guide
<https://americanhumane.org/app/uploads/2016/08/op-guide-zoonoticdiseases.pdf>
- CDC Zoonotic Disease General Guidelines



A clear risk for zoonotic disease transmission to US shelter workers:

- “Animal shelter workers are a vulnerable population whose exposure to zoonotic disease may be greater compared with the general population.” [1]
- “Low levels of concern were present for several serious zoonotic diseases that occur in the studied region including plague, tularemia, and leptospirosis (data not shown). This low level of concern is likely due to lack of awareness of these diseases, their clinical signs and their potential presence in animal shelters.” [2]

Past Education Tools

- Evaluation of zoonotic disease education tools:
 - 3 hour, 200 slide presentation
 - Focused on explaining disease processes and symptoms that sick animals might show
- Pre and Post testing showed an 11% increase in zoonotic disease knowledge among the workers who took the class.

Steneroden, K. K., Hill, A. E., & Salman, M. D. (2011). *Zoonotic Disease Awareness in Animal Shelter Workers and Volunteers and the Effect of Training*. Wiley Online Library.
https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1863-2378.2011.01389.x?casa_token=uSxIWgQI-88AAAAA%3ATXJHcjCi8uNyctCV_ZAKQCLdplARsJiFcwn9-qgXYH5Vydmf5KiUIS81iB5JGVNcGS0u9QRED1mU-0o.

A clear desire for zoonotic disease prevention education in US shelters:

- “Ninety percent of shelters said they would benefit from training in infectious and zoonotic disease.”
- “Infectious-disease training is provided to 30% of staff and 35% of volunteers upon hire. Overall, volunteers received less training in infectious- and zoonotic-disease identification, prevention and control than staff members.”

Steneroden, K. K., Hill, A. E., & Salman, M. D. (2010). *A needs-assessment and demographic survey of infection- control and disease awareness in western US animal shelters*. Preventive Veterinary Medicine.

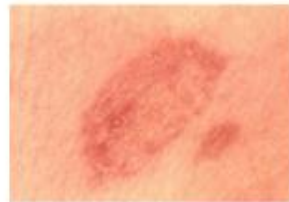
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Project Components:

- Part 1: Literature review
- Part 2: Disease selection

Selected Diseases of Focus [3]:

- Dermatophytosis (ringworm)
- Sarcoptic mange (scabies)
- Tapeworm infection
- Roundworm & Hookworm infection
- Toxoplasmosis
- Leptospirosis
- Rabies
- Salmonellosis
- Campylobacteriosis
- Giardiasis



Ringworm on the back



Ringworm on the arm



Ringworm on the scalp

Image source: <https://www.cdc.gov/fungal/diseases/ringworm/symptoms.html>

Core Safety Precautions

1. Wear Gloves, Do Not Touch Any Other Part Of Your Body With The Gloves
2. Cover/Protect All Open Wounds
3. Consider The Use Of A Face Shield, Safety Goggles, And/Or Face Mask
4. Practice Frequent Hand Washing
5. Use Proper Restraint Methods To Avoid Biting/Scratching
6. Consider Wearing Long Sleeves To Minimize Abrasions
7. Clean Up Urine/Feces In A Timely Manner Using Proper Cleaning Supplies
8. Ensure Proper Contact Time When Using Cleaning Products On High Use Surfaces
9. Store And Consume Food Away From Animals
10. If You Visit Your Doctor Because You Have A Bite/Scratch Wound, Have A Fever, Have Been Experiencing Nausea/Vomiting/Diarrhea, Or Have A Rash, Make Sure To Let Them Know That You Work With Animals In A Shelter Setting



Project Components:

- Part 1: Literature review
- Part 2: Disease selection
- Part 3: Shelter medicine rotation

Shelter Medicine Rotation

- Practiced high quality high volume spay and neuter (HQHVSN)
- Visited 8 animal shelters throughout Kansas
- Toured facilities
- Visited informally with shelter workers



Project Components:

- Part 1: Literature review
- Part 2: Disease selection
- Part 3: Shelter medicine rotation
- **Part 4: Deliverable #1**
 - “The Animal Shelter’s Guide to Zoonotic Disease Prevention”

Deliverable #1

The Animal Shelter's Guide to Zoonotic
Disease Prevention

1

Deliverable #1

Frequently Asked Questions

q. What is a "zoonotic disease"?

a. A disease caused by germs that can be spread between animals and people (1).

q. What kinds of animals can pass zoonotic diseases to humans?

a. Pets such as dogs, cats, horses, rabbits, lizards, and birds are all capable of passing zoonotic diseases to humans. Livestock such as cows, pigs, sheep, and chickens can also pass along diseases.

q. Who is most at risk for getting a zoonotic disease?

a. People who work closely with animals, such as animal shelter volunteers/employees, may be at a higher risk for getting a zoonotic disease. People who have a compromised immune system, such as someone currently getting chemotherapy for cancer or someone who is being treated for an autoimmune condition (such as IBD, Lupus, Psoriasis, etc.) are at a higher risk of getting a zoonotic disease and may be more likely to get more severe symptoms.

q. What are some common zoonotic diseases I may have already heard of?

a. There are many different zoonotic diseases that cats and dogs can pass to humans. You have likely already heard of ringworm, scabies, or rabies. Some zoonotic diseases are much more common than others. Some may be relatively benign (non-harmful) while others can be very dangerous.

q. Once I get a zoonotic disease, can I spread it to my family members?

a. Some zoonotic diseases, such as ringworm, can be spread between people. If you have family members who are immunocompromised, they may be more likely to catch a disease from you.

q. What are some easy ways I can protect myself from getting a zoonotic disease?

a. This document will outline many different safety measures you can take to protect yourself. Some general measures that may help protect you against many different zoonotic diseases are:

- i. Wear gloves, do not touch any other part of your body with the gloves
- ii. Cover/protect all open wounds
- iii. Consider the use of a face shield, safety goggles, and/or face mask
- iv. Practice frequent hand washing
- v. Use proper restraint methods to avoid biting/scratching
- vi. Consider wearing long sleeves to minimize abrasions
- vii. Clean up urine/feces in a timely manner using proper cleaning supplies
- viii. Ensure proper contact time when using cleaning products on high use surfaces
- ix. Store and consume food away from animals
- x. If you visit your doctor because you have a bite/scratch wound, have a fever, have been experiencing nausea/vomiting/diarrhea, or have a rash, make sure to let them know that you work with animals in a shelter setting

q. If I think I may have a zoonotic disease, what should I do?

a. If you think you may have a zoonotic disease, it is best to alert the animal shelter you work with as well as your personal doctor. Things such as a bite/scratch wound, having a fever, experiencing nausea/vomiting or diarrhea, or having a rash may be a sign that you could have a zoonotic disease. If you choose to visit your doctor, it can be helpful to mention that you work with animals in a shelter setting. Your doctor may recommend that you get tested for certain zoonotic diseases.


Project Components:

- Part 1: Literature review
- Part 2: Disease selection
- Part 3: Shelter medicine rotation
- Part 4: Deliverable #1
 - “The Animal Shelter’s Guide to Zoonotic Disease Prevention”
- Part 5: Deliverable #2

Deliverable #2

What are some ways I can protect myself from getting a zoonotic disease?

- Wear gloves
- Put on and take off gloves properly
- Do not touch any other part of your body with the gloves



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APE Core Competencies

Table 2.1 Summary of MPH Foundational Competencies

Number and Competency		Description
7	Assess population needs, assets and capacities that affect communities' health	Population needs and assets were assessed and taken into consideration when writing the "The Animal Shelter's Guide to Zoonotic Disease Prevention" document and while recording the training session.
16	Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making	Principles of leadership (creating a vision, empowering others, fostering collaboration, and guiding decision making) were applied when presenting educational materials to local animal shelters and working with them to implement the materials in their training regimens.
18	Select communication strategies for different audiences and sectors	Communication strategies for the written guide and the recorded training session were selected based on the diverse intended audience.
19	Communicate audience-appropriate public health content, both in writing and through oral presentation	Audience appropriate content was selected for the written guide and the recorded training session.
22	Apply systems thinking tools to a public health issue	A systems thinking approach was taken when analyzing how an animal shelter system works and interacts with surrounding community systems. This information was used to guide the construction of the written guide and the recorded training session.

ILE Concentration Competencies

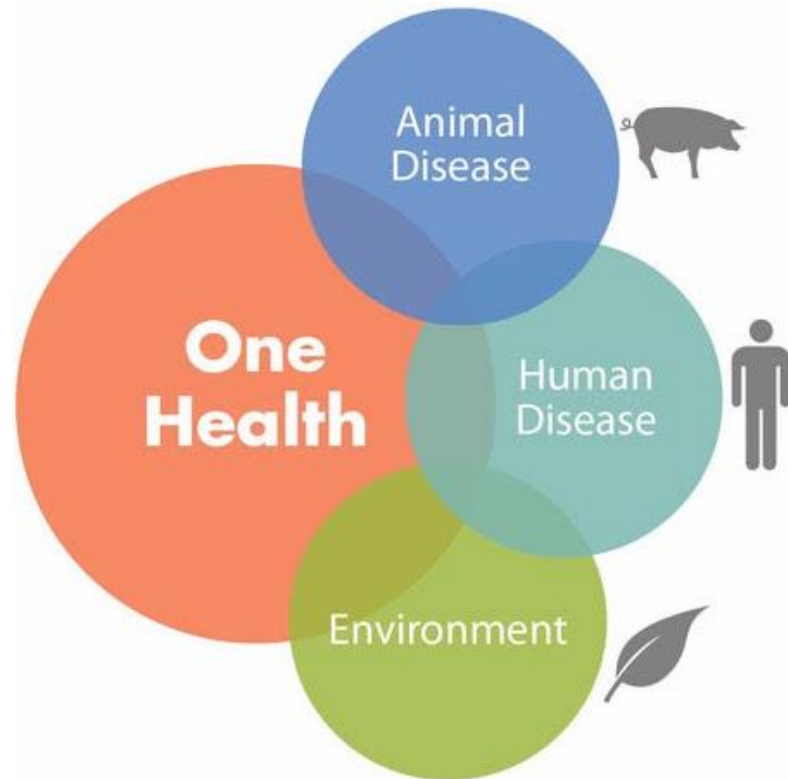
Table 5.3 Summary of MPH Emphasis Area Competencies

MPH Emphasis Area: Infectious Diseases and Zoonoses		
Number and Competency		Description
1	Pathogens/Pathogenic Mechanisms	A literature review of common zoonotic pathogens in an animal shelter setting was conducted for this project. Pathogenic mechanisms were studied in order to better understand the diseases and make recommendations for how to prevent transmission.
2	Host Response to Pathogens/Immunology	Host response to zoonotic disease had to be taken into consideration when conducting a literature review for the project as well as when drafting the training guide. Special attention was paid to describing possible symptoms of disease in human and animal patients and how immunocompromised individuals may respond differently.
3	Environmental/Ecological Influences	Environmental influences within an animal shelter such as animal population density, building size/capability, endemic disease present within the local region, and human-animal interaction had to be kept in mind when deciding which zoonotic diseases to include in the educational materials.
4	Disease Surveillance	Disease surveillance principals were briefly highlighted in portions of the written document that discussed identifying sick animals and identifying possible signs of zoonotic disease in shelter workers.
5	Disease Vectors	Disease vectors play an important role in several of the zoonotic disease that were showcased in the project. Sections in the written document and recorded presentation include mention of how disease vectors play a role in zoonotic disease transmission.

Conclusions:

- Shelters were very receptive to the idea of being provided with educational materials
- Follow-up will be needed to determine if they found the materials helpful, what could be improved upon for future materials, etc.
- Room for continuation on the project:
 - Conducting follow-up surveys
 - Measuring how effective the learning materials are
 - Creating additional learning materials to continue the zoonotic disease training
 - Distributing the educational materials to animal shelters in other states

Conclusions:



Presentation References:

- [1] Steneroden, K. K., Hill, A. E., & Salman, M. D. (2011). *Zoonotic Disease Awareness in Animal Shelter Workers and Volunteers and the Effect of Training*. Wiley Online Library. https://onlinelibrary.wiley.com/doi/pdf/10.1111/j.1863-2378.2011.01389.x?casa_token=uSxIWgQl-88AAAAA%3ATXJHcjCi8uNyctCV_ZAKQCLdplARsJiFcwn9-qgXYH5Vydmf5KiUIS81iB5JGVNcGS0u9QRED1mU-0o.
- [2] Steneroden, K. K., Hill, A. E., & Salman, M. D. (2010). *A needs-assessment and demographic survey of infection-control and disease awareness in western US animal shelters*. Preventive Veterinary Medicine. https://www.sciencedirect.com/science/article/pii/S0167587710003016?casa_token=6FXydCwh704AAAAA%3ALpCdbZ1EgegTheNoliBKNLSQVFh4ibB3tAaJjEGurjty231noDRhJ0zUb7W9XVr_M0usGMfXz_Y.
- [3] Weese, J. S., Peregrine, A. S., & Armstrong, J. (2002). *Occupational health and safety in small animal veterinary practice: Part I--nonparasitic zoonotic diseases*. The Canadian veterinary journal = La revue veterinaire canadienne. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC339409/>.

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