EVALUATING THE FREQUENCY OF ANIMAL EXPOSURES IN PROBABLE AND CONFIRMED CASES OF CRYPTOSPORIDIUM SP, AND GIADIA COLI IN FLORIDA IN 2017

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INTRODUCTION

- Humans and animals have lived side by side for thousands of years.
- With these interactions, transmission of zoonotic diseases between the two groups can often occur
- A variety of zoonotic diseases are on the Reportable Disease List that the Florida Department of Health Bureau of Epidemiology evaluates daily in order to better assess risk factors that might be present in Florida

CRYPTOSPORIDIOSIS

- Caused by the protozoan parasite *Cryptosporidium sp.*
- The most common species that affect humans are *Cryptosporidium parvum and Cryptosporidium hominus*
- This protozoan parasite can be seen in a variety of animals including cattle (often calves), dogs, and reptiles
- Cryptsporidium (commonly referred to as Crypto) can be spread via fecal-oral contamination; this can include person-to-person, animal-to-person, foodborne, or waterborne transmission

CRYPTOSPORIDIOSIS

- Crypto typically has an incubation time in people of 1-12 days
- Symptoms generally noted include: diarrhea (often can be profuse and watery) and abdominal pain in adults with vomiting and anorexia often being noted prior to the diarrhea in children
- People are most infectious to others as long as they are shedding oocysts in their stool which can still occur for weeks after symptoms resolve.

CRYPTOSPORIDIUM PUBLIC HEALTH IMPACT

- Cryptosporidiosis is considered to be a significant cause of diarrheal illness worldwide
- In immune-compromised individuals and people in third-world countries, Crypto can lead to severe health sequelae
- Additionally, the cost on animal health on both economic loss, veterinary costs, and decreasing growth rate of animals can be significant problems in the food production industry
- Given these considerations, determining a way to reduce disease transmission in both humans and animals can have multifactorial impacts

GIARDIASIS

- Caused by the protozoan parasite *Giardia lamblia*
- Like Crypto, this protozoan parasite can also be seen in a variety of animals including cattle, beavers, dogs, and cats
- Giardia is typically spread via fecal-oral contamination and water contamination. Person-to-person transmission is the likely the most common form of transmission

GIARDIA

- Giardia typically has an incubation time in people of approximately 3-25 days but more commonly, an incubation period of around 7-10 days is typically noted
- Symptoms generally noted include: diarrhea, gas/flatulence, greasy stool, stomach or abdominal cramps
- Like with Crypto, people are most infectious to others as long as they are shedding oocysts in their stool which can be months and may be intermittent

GIARDIA PUBLIC HEALTH IMPACT

- It is estimated that 200 million people have symptomatic infection with Giardia in Asia, Africa, and Latin America but asymptomatic infection can be seen in as well
- Infection rates in dogs and cats in various studies in Europe have been noted to be between 20-25%
- In food production animals such as pigs and sheep, infection with Giardia can lead to decreased slaughter weight and decrease in carcass size which can lead to economic loss

EVALUATING ANIMAL EXPOSURES IN FLORIDA

- The project that I am currently still working on focuses on evaluating the frequency of animal exposures in people who were determined to have probable or confirmed infection with Crypto and Giardia in Florida in 2017 based on epidemiological case definitions for each disease.
- Information obtained for this study is taken from MERLIN which is the database system that the Florida Department of Health utilizes for reportable disease reporting and investigation.

HYPOTHESIS

- I hypothesize that in the people who are designated as probable and confirmed cases of *Cryptosporidium sp.* and *Giardia* per the case definition utilized by the Florida Department of Health, an increased number of animal exposures associated with infection in rural locations will be noted compared to in urban locations in Florida

DATA

- MERLIN is the database utilized by county epidemiology departments to track reportable diseases and report to the Bureau of Epidemiology

- This database captures a variety of information including basic demographic information and information pertinent to each individual disease to assist in epidemiologic investigations

DATA

- Data was extracted from MERLIN for analysis including sex, age, zipcode to determine rural versus for urban locations, and animal exposure prior to being diagnosed with infection status

ANALYSIS

- A matched odds ratio will be utilized to evaluate cases with animal exposure versus those without animal exposures which will be considered controls in order to determine if there is a significant difference between the two groups when comparing for rural versus urban settings

ANTICIPATED RESULTS

- I anticipate that there will be significant difference between people who have had animal exposures within different demographic categories and urban versus rural locations in Florida

HOW WILL THIS BE USEFUL?

- The hope is that the findings of this research can be a starting point for further research on how best to address reduction of zoonotic disease transmission from both a veterinary and medical perspective so as to be more integrative between both disciplines

FUTURE RESEARCH IDEAS/EDUCATIONAL OPPORTUNITIES

- Evaluating other enteric diseases for relationships regarding animal exposures and demographic factors
- Evaluating how medical professionals address educating people regarding human-animal interactions, disease risk with animals, and how to reduce disease transmission
- Can be a foundation for more One Health-focused discussions regarding disease prevention and fostering conversations with medical, veterinary, and public health colleagues

RESOURCES

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QUESTIONS???