One Health and Enteric Disease
PulseNet/OutbreakNet East Coast Regional Meeting

Wednesday Sunrise Session
Agenda

• Introduction to One Health
• Cryptosporidium and Goats – Rhode Island
• Campylobacter and Puppies – Florida
• Salmonella and Turtles – Pennsylvania
• Cryptosporidium and Cows – New Hampshire
• Discussion
The health of humans is connected to the health of animals and the environment.
Endemic and Emerging Zoonotic Diseases are spread between animals and people.
Zoonotic Diseases are a Threat to Health Security

- **60%** of existing human infectious diseases are zoonotic.
- **At least 70%** of emerging infectious diseases of humans (including Ebola, HIV, and influenza) have an animal origin.
- **5 new human diseases** appear every year. Three are of animal origin.
- **80%** of agents with potential bioterrorist use are zoonotic pathogens.

www.oie.int/onehealth
One Health: The Way Forward

**One Health** is the collaborative effort of multiple disciplines and sectors

— **working** locally, nationally, regionally, and globally—

**with the goal** of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and our shared environment
Domestic One Health Priorities

- **Address** IHR core capacities from US Joint External Evaluation

- **Partner** with industry, professional organizations, and others on zoonoses prevention
  - NASPHV, Youth in Agriculture, PIJAC, Zoonoses Education Coalition

- **Distribute** zoonoses prevention messaging and One Health updates to stakeholders
  - ZOHU Calls
  - Healthy Pets, Healthy People website
Goat Cuddling and Cryptosporidium: Rhode Island, April 2018
Initial Investigation

- **04/09/18-04/11/18** → 4 reports of crypto received.
- **04/11/18-04/13/18** → Investigated cluster. Learned 3/4 reported attending “pet and cuddle” event at same farm. Baby goats identified as common exposure.
- **04/13/18** → Notified DEM; farm cancelled “pet and cuddle” scheduled for weekend.
- **4/16/18** → Order of quarantine issued by DEM. Provider advisory issued.
Continuing Investigation

- **4/16/18 & 4/17/18** → Additional illness reports received; stool cultures obtained. MADPH notified.
- **4/18/18** → DEM inspected farm. CDC and other states consulted for advice and recommendations.
- **4/18/18 & 4/23/18** → 10 clinical specimens sent to CDC for subtyping.
- **4/24/18** → Farm animals tested for parasites.
- **5/02/18** → Subtyping results received from CDC.
- **5/09/18** → Animal testing results received.
- **5/16/18** → Follow-up joint inspection; order of quarantine lifted.
55 probable and confirmed cases of cryptosporidiosis (21 laboratory confirmed, 2 MA residents)
All reported visiting farm over the 3 weekends beginning on 3/24/18, 3/30/18 and 4/6/18
100% reported contact with baby goats
Median age: 29 years
64% female
Symptoms began a median of 7 days after visiting farm
Symptoms lasted median of 9.5 days (n=12)
61.5% visited health care provider, 5.8% visited ER, 1 case hospitalized (n=52)
Baby Goat Contact Outbreak, RI, 2018

Illness Onsets of Cryptosporosis Cases Associated with Baby Goat Contact

- Number of Cases
- Illness Onset Date


- Cases: 6, 3, 2, 2, 1, 1, 8, 3, 2, 2, 7, 9, 3, 2, 2, 1, 1, 1, 1
Handwashing information

- Handwashing information available for 46 individuals:
  - 7 reported washing hands with soap and water
  - 8 reported washing hands with soap and water & hand sanitizer
  - 22 reported washing hands with hand sanitizer only
  - 9 reported not washing hands at all

32.6% effective
67.4% not effective
Clinical Testing Summary

- All clinical specimens sent to CDC for genotyping were positive for the same subtype of *Cryptosporidium parvum* (IIaA19G2R1)
  - Rare subtype; <10/400 submissions received by CDC in 2017 were positive for this subtype.
  - Subtype identified in goats previously, but not known if it’s a dominant subtype.
Farm Investigation Summary

- Barnyard where goats kept described as wet and unsanitary; DEM noted drier and more sanitary areas available.
- Goats observed to have access to indoor housing that had excessive manure buildup.
- Lack of routine veterinary care.
- 2 goats positive for Cryptosporidium, 2 goats suspect for Cryptosporidium. 1 goat and 1 calf positive for Giardia.
  - Subtyping results not available for animals.
Post Outbreak Recommendations

• Separation of ill animals from well animals
  • Animals that tested negative moved to clean area of farm
• Submit plan for goat yoga
• Better signage for handwashing
  • Ensure soap and water available; do not rely solely on hand sanitizer
  • Instruct guests on proper cleaning of soiled shoes, clothes, etc.
Welcome to Simmons Farm Petting Area

- Please -

Respectful of our farm and animals.
Do not feed outside food for the animals.
(Feed is provided)

Feed is provided.
All litter must be picked up.
(cups recycled or thrown in trash.)

Children must be supervised at all times.

Keep off the fences.
The dogs you meet are working dogs.
Please let them do their jobs.

No smoking allowed on premises.
Thank you for your cooperation.
The Simmons Family.
Conclusions

- Animal contact outbreak associated with baby goats.
- Epi and lab evidence supported cases becoming ill from a common source.
- Environmental evidence also linked cases to farm.
- Improper hygiene contributing factor.
- Need for outreach to other farms that may allow public to interact with animals.
Agricultural Tourism: A Workshop to Identify Public Health Risks

When: May 14th from 6pm - 8pm
Where: RI Farm Bureau 10 Nooseneck Hill Rd West Greenwich, RI
Speakers:
  Dr. Scott Marshall, RIDEM
  Dr. Valerie Koenig, USDA Veterinary Services
  Dr. Kim Haling, USDA Veterinary Services
  Jonathan Barkley, RIDOH
  John Howard, Farm Family Insurance
  Liability Attorney, TBA
Florida
Pennsylvania
New Hampshire Experience

Animal Contact Outbreaks Investigated
Multistate and Local Investigations, NH, 2015-2018

Year

Outbreaks Investigated

2015 2016 2017 2018

Multistate Local
Recent history

- 2017 – Two outbreaks of Cryptosporidium linked to contact with ill calves
- January 2018 – Large outbreak of Cryptosporidium at a university dairy barn
- Spring 2018 – Two outbreaks of Cryptosporidium linked to contact with ill calves
- Fall 2018 – Smaller outbreak of Cryptosporidium at a university dairy barn
Let’s talk about this university dairy barn
- Full dairy operation, run by students
- 90 milking-age cows, 70 growing cows
- Facility open to the public
University dairy barn investigation

- Received notification from Maine about lab-confirmed *Cryptosporidium* case who was visiting the barn
  - Case reported others with similar symptoms
- Barn manager confirmed others ill
- Proposed conducting a site visit at the dairy barn, talking with student workers, providing education at the barn
University dairy barn investigation

Through interviews with students, identified 10 cases of *Crypto*-like illness

Identified several issues with barn
- Lack of hand washing sinks and signs
- Food and drinks in the barn
- Difficulties in boot washing and cleaning

Reported findings to State Veterinarian, who agreed with our recommendations
New Hampshire Experience
University dairy barn investigation

- Sent barn manager and student team advisors a list of our findings and recommendations
  - Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2017
- No illnesses or issues reported during the remainder of the school year

Additional cases identified in the Fall of 2018
New Hampshire Experience

State Veterinarian site visit

- Signs EVERYWHERE!
- Sinks and cleaning supplies in abundance
- Interviews showed increase in knowledge about *Cryptosporidium* and how to prevent it
- Students who were ill were the ones who were not following the barn rules
New Hampshire Experience
Using the One Health approach to prevent additional illnesses at this dairy barn

- Educate students about *Cryptosporidium* in animals
- Institute environmental controls to limit or prevent the spread of disease from animal to human
- Educate students about *Cryptosporidium* in humans
New Hampshire Experience

What worked for us:

- Good working relationship with State Veterinarians (Agriculture, Public Health, etc.)
- Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2017
- Visibility on-site during investigations
CDC One Health Fact Sheet

Available at: https://www.cdc.gov/onehealth/pdfs/OneHealth-FactSheet-FINAL.pdf
Healthy Pets, Healthy People Website

www.cdc.gov/healthypets

Keeping Pets Healthy Keeps People Healthy Too!

Studies have shown that the bond between people and their pets can increase fitness, lower stress, and bring happiness to their owners. But there's something else you should know.

Pets sometimes carry germs that can make people sick. The diseases people get from animals are known as zoonotic (zoo-ah-NOH-tik) diseases. Learn more about the benefits and risks of having pets.

Outbreaks

- Multistate Prittacosis Outbreak among Poultry Plant Workers, 2018
- Salmonella infections linked to pet guinea pigs

See More Outbreaks
1st Wednesday of month, 2pm ET  
NEW: Free Continuing Education  
>9,000 invitees from local, state, & federal human and animal health departments, organizations, academics, and many other partners  
Call topics include timely updates on  
- Companion animals, livestock, and wildlife zoonoses  
- Emerging infectious diseases  
- Vector-borne, foodborne, and waterborne diseases  
- Updates on recent outbreak investigations  
- Environmental health issues  
- Prevention programs, guidance, and resources  
- Upcoming public health events and activities  
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