

# Tennessee One Health Meeting

5/23/19

## Update on CDC One Health Priorities

Kate Varela, DVM, MPH, DACVPM

- A. General overview
  - a. Coordination, collaboration, communication
  - b. CDC One Health Office: 2009
  - c. ~14 staff; vets, disease ecologist, lawyer, loaned experts (OIE, FAO)
  - d. Focus areas: zoonotic and emerging infectious diseases; global health security; influenza/pandemic preparedness; advancing one health in the US and globally; prevent zoonotic diseases between people & pets; one health issues and emergencies
  - e. 60% of existing human infectious diseases are zoonotic; 70% emerging ID are zoonotic
    - i. 5 new human disease appear every year – 3 are of animal origin
- B. Global health activities
  - a. TA to >20 countries around the world; partner with WHO, OIE (World Organization for Animal Health), FAO (Food and Agriculture Organization of the United Nations)
  - b. Tripartite Zoonoses Guide
  - c. Support GHSA activities
  - d. Lead One Health zoonotic disease prioritization process
    - i. Excel-based tool, brings together human/animal/environmental health sectors to prioritize zoonotic diseases together; have used in >20 countries; helps build capacity
    - ii. EID paper: [https://wwwnc.cdc.gov/eid/article/23/13/17-0418\\_article](https://wwwnc.cdc.gov/eid/article/23/13/17-0418_article)
    - iii. Rabies is #1 disease (19/20 countries had on list); zoonotic influenza, VHF, anthrax, brucellosis, zoonotic TB also on list ...
    - iv. December 2017: US workshop (Department of the Interior, USDA, CDC; EPA, NOAA, State Vets). Workshop summary: <https://www.cdc.gov/onehealth/domestic-activities/us-ohzdp.html>
      - 1. Top zoonotic diseases of national concern = zoonotic influenza, salmonellosis, WNV, plague, emerging coronavirus (SARS, MERS), rabies, brucellosis, Lyme
      - 2. Key themes and needs: formal one health coordination mechanism, leadership engagement, national one health framework for US, opportunities to improve collaboration/communication for surveillance and data sharing; strengthening of joint outbreak investigations; joint discussions on research needs
      - 3. One Health Federal Interagency Network (DOD, State, USAID, EPA, HHS, DOI, USDA, NASA)
- C. Domestic activities
  - a. Address IHR core capacities
  - b. Partner with industry, professional organizations, etc. (NASPHV, Youth in Ag, PIJAC)
  - c. Distribute zoonoses prevention messaging and One Health updates to stakeholders
    - i. ZOHU calls
    - ii. Healthy People, Healthy Pets calls (~80k views annually from >50 countries): <https://www.cdc.gov/healthypets/index.html>

- iii. New NASPHV compendium anticipated on non-traditional pet species (reptiles, backyard flocks, etc.)

D. Q&A

- a. US interagency work mainly at federal level, role for state? Hope that states can align with similar process in the future ... Mainly support states through NASPHV.

**Brucellosis Strain RB51**

Leslie Seraphin, DVM, MPH (USDA/APHIS-VS)

- A. Brucellosis: gram negative coccobacilli
  - a. Zoonotic: cattle, bison, goats, pigs, dogs, cetaceans
  - b. *B. abortus*, *B. melitensis*, *B. suis* = category B bioterror agents
  - c. Bang's disease in cattle (Denmark, Dr. Bang 1897)
  - d. Humans: 2-3 week incubation period; flu-like illness (intermittent/irregular, "undulating" fever); chronic infection can occur (endocarditis, spondylitis, etc.)
  - e. Animals: infertility, stillbirth, abortion; joint swelling; asymptomatic infection COMMON
- B. US eradication efforts in cattle started in 1934; eradicated by early 2000 from US cattle herds
  - a. Still exists in bison, elk with occasional spillover into cattle
  - b. Strain 19 vaccine = modified live vaccine; can result in abortions; cattle test (+) by serologic tests – led to new vaccine
  - c. RB51 vaccine = modified live vaccine, negative serology on traditional brucellosis surveillance tests; less abortion; vaccinate at 4-12 months of age; get ear tags or ear tattoo
    - i. Only category 2 accredited vets can receive vaccine; should only vaccinate if sold to states that require vaccination (i.e. Yellowstone area) or in greater Yellowstone Area
    - ii. After 2017 cases, PA State Vet strongly encouraged cessation of vaccination, especially in calves intended to produce raw milk
  - d. Both vaccine strains can cause brucellosis in humans
- C. Texas August 2017: RB51 infection in humans traced to TX dairy (Jersey cow herd, 2 shedding RB51 in milk)
- D. NJ October 2017: RB51 vaccine strain isolated from human case; admitted raw milk from NY distributor
  - a. Co-op with drop offs in NY and NJ (NY law sell only directly from farm; NJ cannot sell or distribute raw milk); advertised milk was from Amish Farms in PA and NJ (no Amish farms? Couldn't locate) → Udder Milk
  - b. Legal jurisdiction complicated
    - i. FDA: dairy products
    - ii. USDA: animal health, vaccine
    - iii. CDC: human health
    - iv. State Ag: sale and distribution of product
    - v. FBA, CIA: BT agent
  - c. Ongoing investigation of Udder Milk: all milk tested negative for RB51
- E. NY November 2018: ill child who drank milk from farm in PA; family initially uncooperative; quarantine placed in late December

- a. Miller's Biodiversity Coop: 48 cattle (46 jersey / 2 Dutch belted): owner stated he did not brucellosis vaccinate
  - i. 2015: 14 jersey cattle purchased and added (some had vaccination tattoos)
  - ii. Previously SOLD TO UDDER MILK
  - iii. Milk samples from all 4 quarters from all 14 purchased cattle: 1 ("Felicity") detected brucellosis from all 4 quarters
    - 1. Isolate from RF and RR matched 2017 NJ human case
    - 2. Isolate from LF and LR matched the 2018 NY human case
  - iv. Lessons in tracing: took PHOTOS of tags rather than writing down ... 840 tag has chip and can be scanned (FDX) – initial tag record traced to Iowa; veterinarian that vaccinated Felicity still had records of such (vaccinated at 11M)
  - v. Felicity removed from milking stream, biologically separated; all lactating cow's milk tested twice – all negative; milk from entire herd discarded (owner did not have a processing dairy buyer available and was not approved to sell raw milk)
    - 1. Purchased by CDC; moved to GA for RB51 shedding research
- F. State raw milk laws: <https://www.farmtoconsumer.org/raw-milk-nation-interactive-map/>
- G. Why does this seem to be more common in Jersey cows?
  - a. Often used by raw milk producers
  - b. Produce milk higher in fat than Holsteins
  - c. Their immune system may allow for RB51 infection to become persistent
  - d. Mature earlier than Holsteins (puberty 10 months vs. 15 months)
- H. Regulatory follow-up ongoing: <https://emergency.cdc.gov/han/han00417.asp>
- I. Q&A
  - a. RB51 is shed in milk; no clear transmission among cattle as with *B. abortus*; multiple strains within vaccine; may be shed in abortion tissues

### **Recent Raw Milk Legislative Efforts in TN**

*John Dunn, DVM, PhD*

- A. Raw milk in TN: inherently risky product due to possible manure contamination
  - a. Availability
    - i. Initially labeled "For Pet Consumption Only"
    - ii. Cow-share programs (since 2009)
- B. TN Outbreaks
  - a. Prior to 2009: 1 outbreak (*Campylobacter* – 4 Bradley county residents ill)
  - b. 2009–2018: 3 outbreaks
    - i. 2 STEC O157: 26 Knox and other ETR county residents ill
      - 1. 10-15% of children who are infected with O157 develop HUS; 5% mortality rate
      - 2. 1<sup>st</sup> outbreak: 2013 → n=9; age 1–7 years; 33% HUS
        - a. Substantial resistance from farm; Health Officers in County/Region got Court Order; HD staff escorted by Sheriff
        - b. Environmental testing: less likely to isolate from bulkhead, milk samples (time lag), but possible to find in manure/environment → in

both outbreaks, found same *E. coli* match in cow manure to clinical isolates

3. 2<sup>nd</sup> outbreak: 2018 → n=17; 1–39 years; 35% HUS

ii. 1 *Cryptosporidium*: 2 Hamilton county residents ill

1. Less clear evidence; environmental testing difficult for Crypto

C. Real Raw Milk facts website: <https://realrawmilkfacts.com/>

D. Legislative efforts this season: family of child with neurologic deficits from drinking raw milk approached local legislator in East TN

a. Initially tried to strike cow shares → huge backlash from raw milk community

b. Tried to establish some protocols / regulation for cow shares – “certified” cow share dairies → can never truly protect / prevent possible contamination with raw milk production

c. Both bills rolled to next years

E. Q&A

a. Camel milk restrictions? Dr. Balthaser to check into it ... Farm in Missouri (?) selling ...

b. Dr. Seraphin commented that Udder Milk sells raw camel milk; some state regulations are specific to raw milk

### Updates

A. Dr. Balthaser: Asian Longhorned tick ID'd in Tennessee in an animal shelter; also a cow at UT Vet School that is also suspect – sending to NVSL