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Dear Clinicians,

Thank you for providing valuable feedback on our first issue of One Health Notes! As a result of your input, I am challenged to up the stakes to do more than simply report on issues that cross veterinary and human health boundaries. As one colleague suggested, the real value of this newsletter could be to foster relationships and awareness between veterinary, human and environmental health disciplines in practice and academe.

Since 1940, over 300 contagious diseases have been identified which affect humans, animals or both and many of these have flourished because of environmental modifications, natural and manmade. In both practice and academe it is well understood that human behavior, specific or broad, often shapes the biologic happenstance that turns microbes into disease monsters. Tickborne diseases certainly exemplify the intersection of veterinary and human medicine alongside environmental changes in New River. For example, since 2005, the annual number of human cases of Lyme disease has grown from 5 to 234, making Lyme disease the most prevalent human, non-STD communicable disease reported in New River Health District. This phenomenon resulted from the migration of the northern variant of the black legged tick which thrives in altitudes over 1500 feet. The deer population explosion in peri-domestic forests up and down the east coast supported the life cycle of this particular tick that hosts *Borrelia burgdorferi*. Veterinarians first saw the Lyme disease explosion among pets making Lyme a common household illness for both humans and animals both of which spend time in the changing landscape of our community.

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## Things Aren't Always What They Seem, by Bill Pierson

What's Your Diagnosis? A 3 year old intact male DSH, inside / outside cat, presents with tachypnea, cyanotic /slightly icteric MM, T=103F, muffled heart sounds, lymphadenopathy, leukopenia with numerous toxic neutrophils and elevated liver enzymes / bilirubin. Radiology reveals hepatomegaly and a distinct fluid line in the thoracic cavity. Copious amounts of cloudy fluid containing a large number of toxic neutrophils and rod-shaped bacteria is obtained by thoracentesis. The owner indicates that run-ins with other cats are common (plenty of old scars). You treat with IV fluids and antibiotics while waiting on a bacterial ID with C&S, but the owner decides to euthanize.

## After hours emergency contact

(540) 585-3339

This number is monitored after hours; please leave a message and your call will be returned! Report:

- Animal bites,
- [Reportable diseases](#) within 24 hours of diagnosis and
- Exposure to chemical, biological or radiological events.

Were you thinking - typical pyothorax following a bite to the chest? Necropsy certainly confirms the pyothorax, but no chest punctures. The ID comes back *Francisella tularensis*, a zoonotic agent that falls under state (VDH) and federal (CDC) jurisdiction. You, your technicians, kennel help, the owner and his family (twenty five in all) have all been exposed. In addition to being a fighter, this cat was also a good hunter. And yes, it's that season again when rabbits - the prime reservoir- are breeding; well, like rabbits.

Each year, there are 2-3 cases of human tularemia in Virginia. Patients often exhibit ulceration at site of skin inoculation and/or severe flu-like symptoms, especially when *F. tularensis* is inhaled. Untreated or treated like the flu, tularemia can be deadly. So, think twice the next time you get an unresponsive feline pyothorax. It may seem like a typical fight wound, but looks can be deceiving.

## APHIS Notes from the Field: Tick Talk, by Lynette Tobias

Spring is here and our old "friends" will be lying in wait for us in our lawns, pastures and woods! Ticks carry many diseases that they can transmit to humans as well as our pets and livestock. We hear a lot about Lyme disease but did you know that the same tick that carries Lyme disease, the black legged or deer tick, *Ixodes scapularis*, also carries the bacterium that causes Anaplasmosis in humans, horses, dogs and sheep as well as the protozoa parasite that causes babesiosis in a wide range of domestic species as well as people?

So where does the USDA get involved with tick borne disease? Cattle fever is a severe and often fatal disease of cattle transmitted by cattle fever ticks, *Rhipicephalus annulatus*, and southern cattle ticks, *R. microplus*. *Babesia bovis* is a single-celled protozoan parasite of cattle which occasionally infects humans. It is a member of the phylum Apicomplexa, which also includes the malaria parasite. This disease and other members of the genus *Babesia* cause is a hemolytic anemia known as babesiosis and colloquially called Texas cattle fever, redwater or piroplasmosis

To combat fever ticks, the Animal and Plant Health Inspection Service created the Cattle Fever Tick Eradication Program (CFTEP) in 1906. With the help of mounted patrol inspectors (also known as tick riders) and systematic quarantines, the CFTEP eradicated cattle fever and cattle fever ticks from the continental United States in 1943, with the exception of a permanent quarantine "buffer" zone between Texas and Mexico—a country where these ticks remain well established. Today, this buffer zone extends over 500 miles from Del Rio, Texas, to the Gulf of Mexico. Current efforts to control fever ticks along the quarantine line include a partial tick control barrier fence, livestock movement quarantines, and tick treatments for cattle and deer. While these methods are effective, the free-ranging movement of deer and stray livestock across non-fenced properties and an increase in the overall white-tailed deer population has led to increased fever tick infestations

in South Texas in recent years.

As the weather warms and we and our pets spend increasing time out of doors, please be vigilant in checking for ticks on ourselves and our domestic animals. If removed quickly, we can decrease the likelihood of disease transmission and caught early, tick borne diseases are more easily treated successfully.

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### Tick Summary from our State Public Health Veterinarian, Julia Murphy and David Gaines, State Public Health Entomologist

Certain tick-borne diseases, such as Lyme disease, ehrlichiosis, anaplasmosis and spotted fever rickettsiosis are reportable to the Virginia Department of Health (VDH) when they infect people. Lyme disease is the most common tick-borne disease of people in Virginia. Ehrlichiosis is the second most frequently confirmed human tick-borne disease in Virginia and is much more frequently confirmed than anaplasmosis. Ehrlichiosis is transmitted by lone star ticks (*Amblyomma americanum*), which are, by far, the most common tick to bite people in the lower elevations of Virginia, but are considerably less common than blacklegged ticks in the New River Valley. Anaplasmosis is transmitted only by the blacklegged tick.

From 2005-2014, the annual number of human cases of Lyme disease, Ehrlichiosis and Anaplasmosis reported in Virginia residents has risen steadily. Annual Lyme disease case counts in people have increased nearly five-fold in that time span, from 274 to 1346 cases reported yearly statewide. Annual ehrlichiosis/anaplasmosis case counts rose from 13 cases reported in 2005 to 137 cases reported in 2014. Ehrlichiosis and anaplasmosis are serologically cross-reactive, so the actual cause of illness can only be clearly confirmed by testing whole patient blood (collected during acute illness) for ehrlichiosis and anaplasmosis by a multiplex PCR assay.

The number of reported human cases of Spotted Fever Rickettsiosis (SFR) (including Rocky Mountain spotted fever [RMSF]) in Virginia also rose from 121 in 2005 to 373 in 2014. The SFR term is now used instead of RMSF because most diagnosed cases of RMSF are likely due to patients having been exposed to common non-pathogenic, or mildly pathogenic species of spotted fever group *Rickettsiae* (SFGR) carried by ticks; all species of SFGR are serologically cross-reactive. Cases of confirmed RMSF are uncommon in VA, but do occasionally cause fatalities. The American dog tick (*Dermacentor variabilis*) was once considered the most important carrier of RMSF, but has rarely been found infected with the agent of RMSF. Recent research indicates that the Brown dog tick (*Rhipicephalus sanguineus*), an uncommon species that lives primarily in and around dog kennels and on the walls of

structures where dogs live, is a much more important vector of RMSF to both dogs and people.

Veterinarians have an excellent opportunity to promote public health by mentioning to their clients as part of any discussion about tick-borne disease control in their pets, that tick-borne diseases can also affect people. The Virginia Department of Health has excellent tick-borne disease information available at

<http://www.vdh.virginia.gov/epidemiology/DEE/Vectorborne/index.htm>

which includes downloadable materials such as fact sheets, tick identification charts, brochures that offer an overview of tick-borne diseases in Virginia and Lyme disease information for children.

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## Rabies

Rabies Data to Date in 2016: 3 animals from 2 species tested positive for rabies involving 136 case investigations for human exposure, resulting in 14 persons who received rabies post-exposure prophylaxis.

For any animal bite, please call me or my staff for assistance if you are unsure about the risk of rabies. The after-hours emergency contact number to the left of this text can be used ANY time to report rabies exposure as the pager is always on and attached to a trained member of our response team.

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