Public Tick IPM Working Group
January 7, 2015
Send corrections to cnelson@ipminstitute.org

The Working Group meets via conference call on the second Wednesday of each month at 1:00PM CT (2:00PM EST). The next conference call will take place February 11th.

1. Roll
   - Bob Maurais, Mainely Ticks
   - Jill Auerbach, Hudson Valley Lyme Disease Association
   - Lynnae Jess, NC IPM Center, MSU
   - Pat Smith, Lyme Disease Association
   - John Carroll, USDA-ARS
   - Chloe Nelson, IPM Institute of North America, Inc.

2. Tick-related news updates
   A. “Comparison of phenology and pathogen prevalence, including infection with the Ehrlichia muris-like (EML) agent, of Ixodes scapularis removed from soldiers in the midwestern and the northeastern United States over a 15 year period (1997-2012)”
      http://www.parasitesandvectors.com/content/pdf/s13071-014-0553-z.pdf
      Summary:
      From 1998 to 2012 human-biting ticks submitted to the Department of Defense Human Tick Test Kit Program of the US Army Public Health Command from Minnesota, Wisconsin and Pennsylvania were tested for the agents of Lyme disease, anaplasmosis, babesiosis, and ehrlichiosis. They found greater rates of Anaplasma phagocytophilum and Babesia microti in tick submissions from Minnesota with the Ehrlichia muris-like agent only found in Minnesota and Wisconsin. Midwestern ticks were more likely to be co-infected than those from Pennsylvania. Ticks in adult stage were primarily found in June from Minnesota, with adults and nymphal peaks overlapping. This study relates seasonal and temperature differences between the three states with the length of time a population has been established to the observed differences between sites. The synchrony of adults and nymphs in the upper Midwest has implications for pathogen infection prevalence.

   B. “New Tick-Borne ‘Bourbon Virus’ Is Deadly and Unlike Anything Previously Seen in U.S.”
      http://www.huffingtonpost.com/2014/12/24/bourbon-virus-tick-kansas_n_6377932.html
      Summary:
      The Bourbon Virus, named after Bourbon County, Kansas, was discovered that is thought to be transmitted by ticks. Only one patient has contracted the virus thus far, so much is unknown. The virus killed the previously healthy man ten days after being admitted to the hospital. It being a virus is a main concern, since it can’t be treated like other tick-borne diseases with antibiotics.

   C. “Borrelia burgdorferi Promotes the Establishment of Babesia microti in the Northeastern United States”
      http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0115494
      Summary:
      Studies have shown that the reproduction number of babesia microti, responsible for babesiosis is below the threshold for persistence. This doesn’t correspond to the geographic expansion and persistence of human babesiosis. Since Lyme disease and babesiosis are both hosted in blacklegged ticks and the white-footed
mouse, mice were tested with co-infection of babesia microti and borrelia burgdorferi with an end result that borrelia burgdorferi increased the frequency of babesia microti. This study helps explain the expansion and persistence of babesiosis despite its lower reproduction number and provides a model to predict the ecological factors sufficient for emergence of babesia microti in the wild.

3. Related Discussion:

- Last year around Christmas there was a similar death from Powassan Virus in Maine. These viruses don’t receive the same exposure as Lyme or babesiosis, but where the transmission time for borrelia is usually 12-36 hours, Powassan can be transmitted within 15 minutes.
- University of Toledo was just given a grant to do Powassan research. The number of tick-borne viruses coming out are problematic since there are no treatments, only palliative care.
- Pat Smith added that “Lyme literate physicians” test for multiple infections, but generally practitioners don’t unless co-infection occurrences are high in corresponding areas. They’ve updated their LymeR Primer to about 15 diseases, up from a previous 7 for this reason.
- Cases of meat allergies developed from Lone Star tick bites are increasing. The Lone Star tick transfers alpha-gal into the bloodstream which is also in red meat. When meat is consumed, the body produces antibodies to fight the sugar. Danger levels increase because red meat allergic reactions can occur up to eight hours after meat consumption. For more information: [http://www.webmd.com/allergies/news/20140813/tick-bites-red-meat-allergy](http://www.webmd.com/allergies/news/20140813/tick-bites-red-meat-allergy)
- Also of concern: Crimean-Congo hemorrhagic fever virus that originated in Africa and has now spread to parts of Asia and Europe. Transmission is usually from Hyalomma ticks that are very adaptable. There’s worry that it could be brought into the U.S. For more information: [http://www.who.int/mediacentre/factsheets/fs208/en/](http://www.who.int/mediacentre/factsheets/fs208/en/)
- It’s likely that we’ll see more of these viruses emerge and more research is needed to find ways to prevent pathogens from being transmitted to humans and animals. One of our major goals is to fight for increased funding in this field.
- Jill Auerbach previously put together the personal costs of Lyme disease (from US Biologic, who got their numbers from other research) that estimated an average case of Lyme disease costing ~$10,000. That figures to around 3 billion dollars per year. NY State alone was around 700 million. This past year NIH only funded 21 million for Lyme disease which doesn’t come close to comparing with the cost of tick-borne disease.
- **Bob Maurais: How does the group present what the actual number of cases of disease are?**
  - Pat Smith has maps on their website developed with the CDC numbers. The maps have footnotes that indicate that the numbers are probably underreported by a factor of 10. When the CDC is taking in the reported cases they are using a very narrow definition of the disease, only used for surveillance and not diagnostics. When CDC did the report resulting in the 300,000 number, they took into account some other factors that contributed to the higher numbers, knowing they needed to conclude a “true” number of actual cases and not just those that met the CDC standard.
  - Jill Auerbach added that doctor underreporting is also a factor since reportable disease paperwork for tick-borne disease can be considered a waste of time. The department of health has to do something with reports for diseases like STDs, but not with tick-borne diseases.

4. Testing Lab update from Pat Smith
Meeting January 8th-9th on the NIH campus in response to the FDA proposed new guidance for testing labs for humans. The new guidance moves tests currently considered CLIA approved (Clinical Laboratory Improvement Amendments), which are the majority of tests for tick-borne and Lyme diseases that specialty labs do, under the FDA.

This is problematic because thousands of tests in addition to Lyme tests will be moved and FDA is having difficulty keeping up with the amount of work for the amount of funding they have.

They’ve decided that these tests aren’t regulated enough, so they want to have adverse reporting under CLIA approved tests. The existing already approved FDA tests will be grandfathered into the process, so complaints about FDA cleared or approved tests won’t be looked at because the current labs do multiple types of tests that FDA doesn’t know which type of test the complaint is for. The complaint could be something like “my test was negative, but my result is actually positive”.

The specialty labs will be brought under this same dysfunctional system that is being grandfathered in and they will be required to report adverse events. Since specialty labs usually only do one type of Lyme test, adverse events are easily definable. This will result in an unequal standard since complaints about specialty lab tests will be readily seen, but the others (grandfathered) won’t be.

A representative from LDA, LDO and two people from hygienic labs will be talking about the Lyme testing issue. There is also webinar and they will be putting something out if people need to take any kind of action. It’s very concerning because the playing field is not level, not to mention that the way the tests will be brought in under FDA is from reviews with specialty panels with potential biases.

5. 2015 Proposal implementation-Potential Tick IPM Conference

- The 2015 renewal proposal was submitted to the North Central IPM Center on December 12th. We expect to hear back around the middle of February.

- Over the past few calls there has been high support and voiced need for a Tick IPM Conference. This would be a priority for the entire group if taken on.

- One Working Group objective is to lead or collaborate on at least two projects. This would fulfill that goal. Moving forward the group should discuss the scale of an ideal conference: having speakers come in, time frame, additional funding sources, etc.

- Past conferences can be referenced as models for funding and/or set-up. Some examples include:
  - 2014 Brown Marmorated Stink Bug conference
  - 2013 Tick-Borne Disease IPM Conference by EPA and CDC
  - 2011 Promoting Community IPM for Preventing Tick-Borne Diseases by EPA

- Chloe Nelson will contact Ellen Stormdahl from US Public Health to see if they would be interested in getting involved or helping set something up.

- The annual Tick Summit usually in December is another potential avenue for involvement.

- June, July and August were identified as potentially preferable months. Conferences with a disease focus don’t usually occur in summer, while tick activity is heightened during this time.

- This is in the idea stage, but any group members with more ideas, suggestions or other comments are encouraged to share them with the Working Group since it will take a higher level of collaboration to bring this into fruition.

The next conference call will take place February 11th. Future calls will continue to fall on the second Wednesday of each month.