Lyme and other Tick-borne diseases 2018

What do we know?
What do we need to know?

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From ONE tick bite...

- Lyme disease\(^1\) (*Borrelia burgdorferi* and others)
- Relapsing fever??? (*Borrelia miyamatoi* and others)
- Bartonellosis\(^2\) (*Bartonella henslae* and others)
- Babesiosis\(^3\) (*Babesia microtii* or *B. duncanii*)
- Rickettsial diseases, caused by:
  - Anaplasmosis\(^4\)
  - Ehrlichiosis\(^5\)
  - Rocky Mountain Spotted Fever???
- Flaviviruses that may cause encephalitis
  - *Powassan virus*, *TBE virus*???
CDC reports: Lyme disease infects 300,000 people a year. 10 times more Americans than previously reported.

- 5,770 cases per week
- 822 cases per day

25% of new Lyme disease cases each year are children.
Lyme disease **SCIENCE:** What we **KNOW**...

- Lyme disease is an infection caused by *Borrelia*, a type of highly motile bacteria called **spirochetes**.
- Other tick-borne diseases are caused by different microbes, including viruses and parasites which are not affected by standard antibiotics.
- Natural host in nature (**reservoir**) for *Borrelia* are small animals (**not deer**)!
- Ticks (**vector**) pick up the microbes when they feed on their natural host, then inject them into humans.
- Once injected they may stay in the skin (which produces a rash) **AND/OR** spread via the bloodstream to various tissues (joints, heart, nervous system) and form permanent colonies called **biofilms**.
- When under stress, *Borrelia* spirochetes **morph into different shapes and forms** (called round bodies, cysts, and/or persisters) and go metabolically dormant.
- Non-spirochetal forms of *Borrelia* are **ANTIBIOTIC TOLERANT**.
- **Persistent presence** of the non-spirochetal drives **chronic inflammatory disease** in 30-50% of people infected with this bacteria.
The Many Forms of *Borrelia*

- **Spirochete** (twisted rod) is motile and swims; causes acute inflammation (rash in skin, carditis in the heart, etc).

- **Biofilms** form in tissues when spirochetes assemble and produce colonies; causes acute and chronic inflammation.

- **Round bodies** are dormant, balled up, drug tolerant “persister” forms; little to no research on the pathological effects of these forms.
Lyme disease MEDICINE: BEHIND THE TIMES

- Existing clinical information on Lyme disease is based on a small number of 30 year old, poorly designed, highly biased clinical studies.
- Quality of the evidence IDSA medical guidelines are based on is considered LOW according to international guidelines standards.
- Diagnosis and care guidelines don’t match the patient narrative OR the available science.
- Specific Examples of Medical Recommendations BASED ON BAD SCIENCE
  - 70-80% of cases of Lyme disease start with a “bulls-eye” rash.
  - 2 pills of doxycycline at the time of a tick bite “prevents Lyme disease.”
  - Current blood tests Lab tests used for diagnosis are clinically accurate.
  - 3 weeks of oral doxycycline for Lyme disease is a highly effective treatment for Lyme disease 95% of the time.
  - One month of IV ceftriaxone (Rocephin) is a highly effective treatment for the remaining 5% who don’t get well.
Some people with Lyme disease are as disabled as people with congestive heart failure, and have as much pain as post-surgery patients.

- 40% of Lyme patients end up with long term health problems.
- Short treatment courses have resulted in upwards of a 40% relapse rate.
- 60% of patients with untreated infection may have arthritis, with severe joint pain and swelling.
NO RELIABLE TEST

There is no reliable test to diagnose Lyme disease. The average patient sees 5 doctors over nearly 2 years before being properly diagnosed.

50% Fewer than 50% of patients with Lyme disease remember a tick bite.

50% Fewer than 50% of patients with Lyme disease recall any rash.

35% The common Elisa test you receive at your doctor's office misses 35%-50% of culture proven Lyme disease.

State of diagnostic testing for other tick-borne diseases IS EVEN WORSE!
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BIOREPOSITORY

One of the biggest barriers to research in any disease is having access to quality samples for research. Focus On Lyme biorepository was created to fill a need to supply quality samples to further research for Lyme and tick borne diseases. The samples are tested, qualified and available to enhance the future understanding of diagnostics, treatment, and the biology of these organisms.

New Lyme screen researched locally

July 28, 2017 11:18 AM

DELMAR - Julie Ward has been living with Lyme Disease for the past 25 years. But she only began treatment three years ago.

"I feel like I'm 80 years old in a 55-year-old's body," explains Ward just after donating six vials of her blood for research at the Stram Center for Integrative Medicine.
**LymeSeq**: Microfluidics assay for Lyme/TBD using the FoL Biorepository

“Rather than using a reductionist biomarker paradigm, immuno-signaturing relies on a multiplexed system in which the **entire population of antibodies** circulating in blood at a given time is profiled.”
NO MORE TICKS!

www.lymeactionnetwork.org