



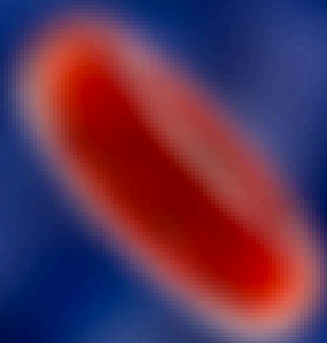
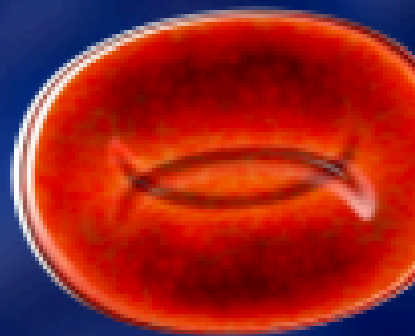
Beyond Lyme: Exploring Lesser Known Tickborne Coinfections

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Ticks are tiny blood-sucking arachnids that can pose significant risks to our health.

While Lyme disease is the most well-known tickborne illness, ticks can transmit multiple pathogens in a single bite, leading to various coinfections.

According to several studies, non-Lyme tickborne infections are heavily underdiagnosed.

These lesser-known tickborne diseases can complicate diagnosis and treatment, causing prolonged suffering and chronic health issues if left untreated.

Understanding and recognizing the full spectrum of tickborne coinfections is key for effective diagnosis and management.

This article sheds light on lesser-known tickborne coinfections, their symptoms, and advanced diagnostic tools to identify and manage these pathogens.

What Are Tickborne Coinfections?

Tickborne coinfections occur when a single tick bite transmits multiple pathogens, leading to simultaneous infections.

Ticks are vectors for various bacteria, viruses, and parasites and can pass these on to humans and animals during a blood meal.

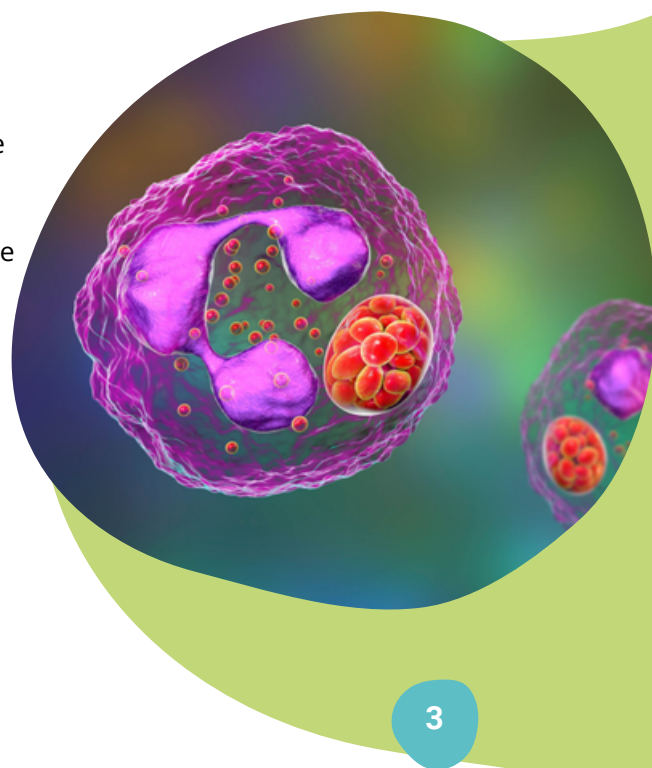
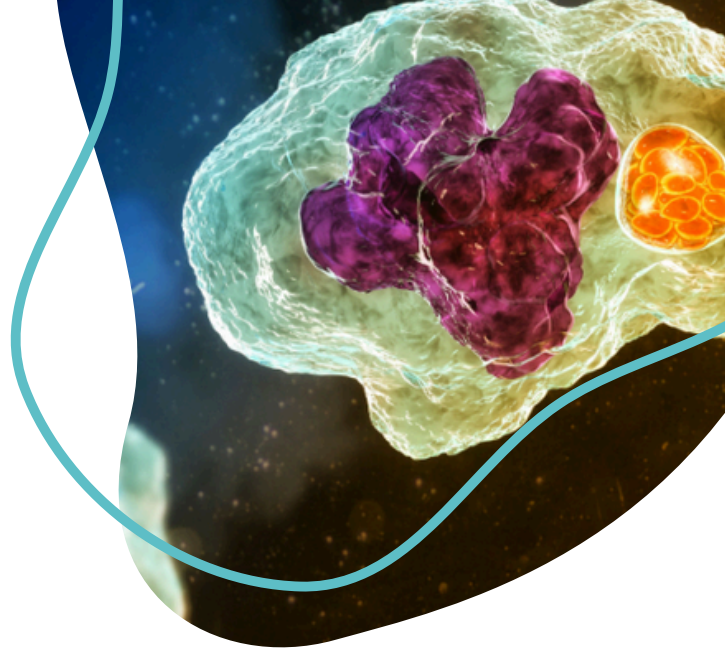
The most well-known tickborne disease is Lyme, caused by the bacterium *Borrelia burgdorferi*.

However, ticks can also carry and transmit other pathogens, such as *Babesia*, *Anaplasma*, and *Ehrlichia*.

When these infections occur together, they are known as coinfections, and they can significantly complicate the clinical picture and treatment approach.

Coinfections can worsen matters because the pathogens may behave differently within their respective hosts, thus impacting disease severity.¹

Tick-borne diseases and co-infection: Current considerations:



Why Awareness of Tickborne Coinfections Matters

Awareness of tickborne coinfections is vital because these infections often go undiagnosed or misdiagnosed, leading to inadequate treatment and prolonged health issues.

Symptoms of tickborne coinfections can overlap with those of Lyme disease, making it challenging to accurately identify and treat each pathogen.

Without comprehensive testing, patients may receive treatment for one infection while another goes unnoticed, allowing the untreated pathogen to cause chronic symptoms and complications.

Transmission Cycle of Tick-Borne Infections and Co-Infections, Animal Models and Diseases:



Common Tickborne Coinfections

Babesiosis is caused by microscopic parasites of the genus *Babesia*, which infect red blood cells. It's primarily transmitted through the bite of an infected black-legged tick, also known as the deer tick.

Babesia microti is the most common species of *Babesia* that causes disease in humans in the United States and can infect immunocompetent individuals for up to two years without noticeable symptoms.

Similar to *B. burgdorferi* (the bacteria responsible for Lyme disease), *Babesia* parasites can evade immune defenses and impair host immune mechanisms, allowing them to remain in the body for long periods.²

Studies indicate that coinfection with *B. burgdorferi* and *B. microti* is common and causes greater disease severity and duration in humans.

Symptoms of Babesiosis can range from mild to severe and may include fever, fatigue, malaise, weakness, chills, sweats, and headaches.²



**Persistence of
Babesia microti
Infection in Humans**



**Coinfection by *Ixodes* Tick-Borne
Pathogens: Ecological,
Epidemiological, and Clinical
Consequences**

Anaplasmosis

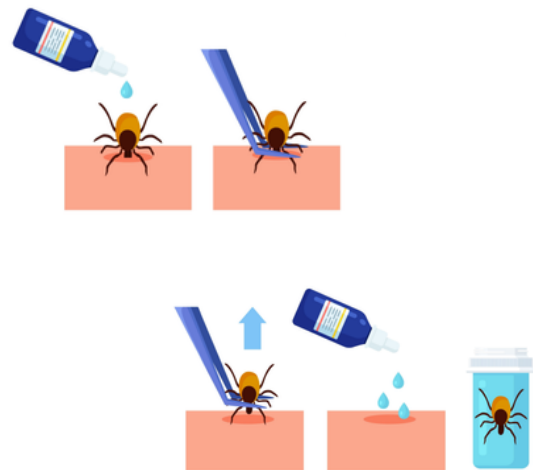
Anaplasmosis is caused by the bacterium *Anaplasma phagocytophilum*, which is also transmitted by the black-legged tick. This bacterium infects white blood cells and can lead to serious health problems if not promptly treated.

Anaplasmosis may present as a mild flu-like illness or a life-threatening, sepsis-like condition.

Complications can range from acute respiratory distress to muscle degeneration and even death.

Evidence suggests that the severity of the disease is intertwined with the host's immune system and that pathogenesis is related to an uncontrolled, innate inflammatory reaction rather than the actual bacterial load from the pathogen.³

Common symptoms of Anaplasmosis include fever, chills, headache, muscle pain, low blood platelet count, leukopenia (lack of leukocytes), and elevated liver enzymes.



Ehrlichiosis

Ehrlichiosis is a bacterial infection caused by various species of the *Ehrlichia* genus, primarily *Ehrlichia chaffeensis* and *Ehrlichia ewingii*. These bacteria are transmitted by the lone star tick and other tick species.

Like the other tickborne coinfections, the disease is more severe, and fatalities are more common in immunocompromised patients.

Symptoms of human Ehrlichiosis include fever, severe headache, and general malaise. Muscle pain and gastrointestinal distress are also often present.

Additionally, neurologic signs, including confusion, develop in approximately 20% of patients, and in severe cases, difficulty breathing and bleeding diatheses (higher likelihood to bleed or bruise) are reported.



Pro-inflammatory immune responses are associated with clinical signs and symptoms of human anaplasmosis



Ehrlichiosis

Advanced Diagnostics for Tickborne Diseases & Coinfections

Diagnosing tickborne coinfections can be difficult due to overlapping or vague symptoms, immune response variability, and limitations of standard testing.

Thus, specialized diagnostic tools are necessary to uncover coinfections and mitigate symptoms.

Tickborne Diseases Test

To catch Lyme and prominent tickborne coinfections more efficiently and earlier, you can utilize precision testing such as the Vibrant Tickborne Diseases Test.

The Vibrant Tickborne Disease Test uses an innovative customizable multiplex protein microarray and chemiluminescence technology to evaluate 121 analytes, capturing both antibody responses and direct pathogen DNA.

The panel detects a broad range of antibodies and exposure to multiple pathogens simultaneously, including Lyme disease and TBRF and coinfections of tickborne diseases like Anaplasma, Babesia, Borrelia, Bartonella, Ehrlichia, and Rickettsia species.

When compared with traditional testing methods, Vibrant's technology provides several advantages, including:

1. Optimization: Allows testing for many different antigens at the same time, without sacrificing accuracy or sensitivity
2. Automation: The automated process enhances efficiency
3. Utilization of Resources: Reduces turnaround time and labor costs and removes the need for manual handling and subjective result interpretation
4. Streamlined Process: Detects all antibodies in a single run

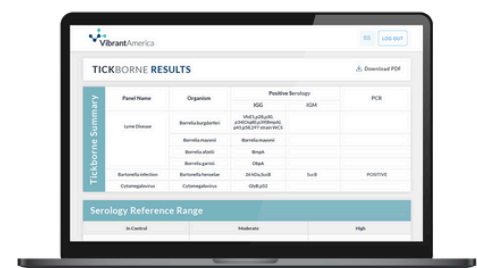
The test's microarray, structured in pillars with individual microchips, isolates each protein, preventing the cross-reactivity that plagues conventional blot tests.

This method not only identifies a broad range of infections but significantly increases the chances of early intervention by combining antibody (indirect) and DNA (direct) testing, promoting better health outcomes.

An ultra-high-density protein microarray for high throughput single-tier serological detection of Lyme disease:



Vibrant's Tickborne Diseases Test



Tick-borne Summary	Panel Name	Organism	Positive Serology		PCR	
			IGG	IGM		
	Lyme Disease	<i>Borrelia burgdorferi</i>	VitE t28/p200, p30/p200, p41/p40A, p45/p58,277 strain WCS			
		<i>Borrelia mayonii</i>	<i>Borrelia mayonii</i>			
		<i>Borrelia afzelii</i>	<i>Borrelia</i>			
	<i>Borrelia garinii</i>	<i>Dt9A</i>				
	<i>Bartonella henselae</i>	26.0A,5aB	SuB8		POSITIVE	
	<i>C. burnetii</i>	<i>C. burnetii</i>	CoB,CoS2			

Tickborne Disease & Longevity

Tickborne illness is a complex phenomenon with various sources and different pathologies.

While Lyme disease is often the primary focus, other lesser-known infections like Babesiosis, Anaplasmosis, and Ehrlichiosis can also significantly impact your health.

These coinfections frequently present with overlapping symptoms, making it difficult to isolate which one you're infected with.

Tests that can simultaneously identify multiple pathogens, like the [Tickborne Diseases Test](#) and Tickborne Autoimmunity Panel, are essential for uncovering the full spectrum of tickborne infections.

Early detection through comprehensive testing ensures you'll receive the appropriate treatment promptly, reducing the risk of chronic health issues and enhancing longevity.

References:

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Be a Healthcare Pioneer

Enhance patient care with state-of-the-art functional lab testing for accurate diagnoses and targeted treatment plans.

[Get Started](#)



Regulatory Statement:

The general wellness test intended uses relate to sustaining or offering general improvement to functions associated with a general state of health while making reference to diseases or conditions. This test has been laboratory developed and its performance characteristics determined by Vibrant America LLC and Vibrant Genomics, a CLIA-certified and CAP-accredited laboratory performing the test. The lab tests referenced have not been cleared or approved by the U.S. Food and Drug Administration (FDA). Although FDA does not currently clear or approve laboratory-developed tests in the U.S., certification of the laboratory is required under CLIA to ensure the quality and validity of the tests.