



Key Clinical and Laboratory Features in Early Diagnosis of Ehrlichiosis in an Endemic Area of Long Island, New York

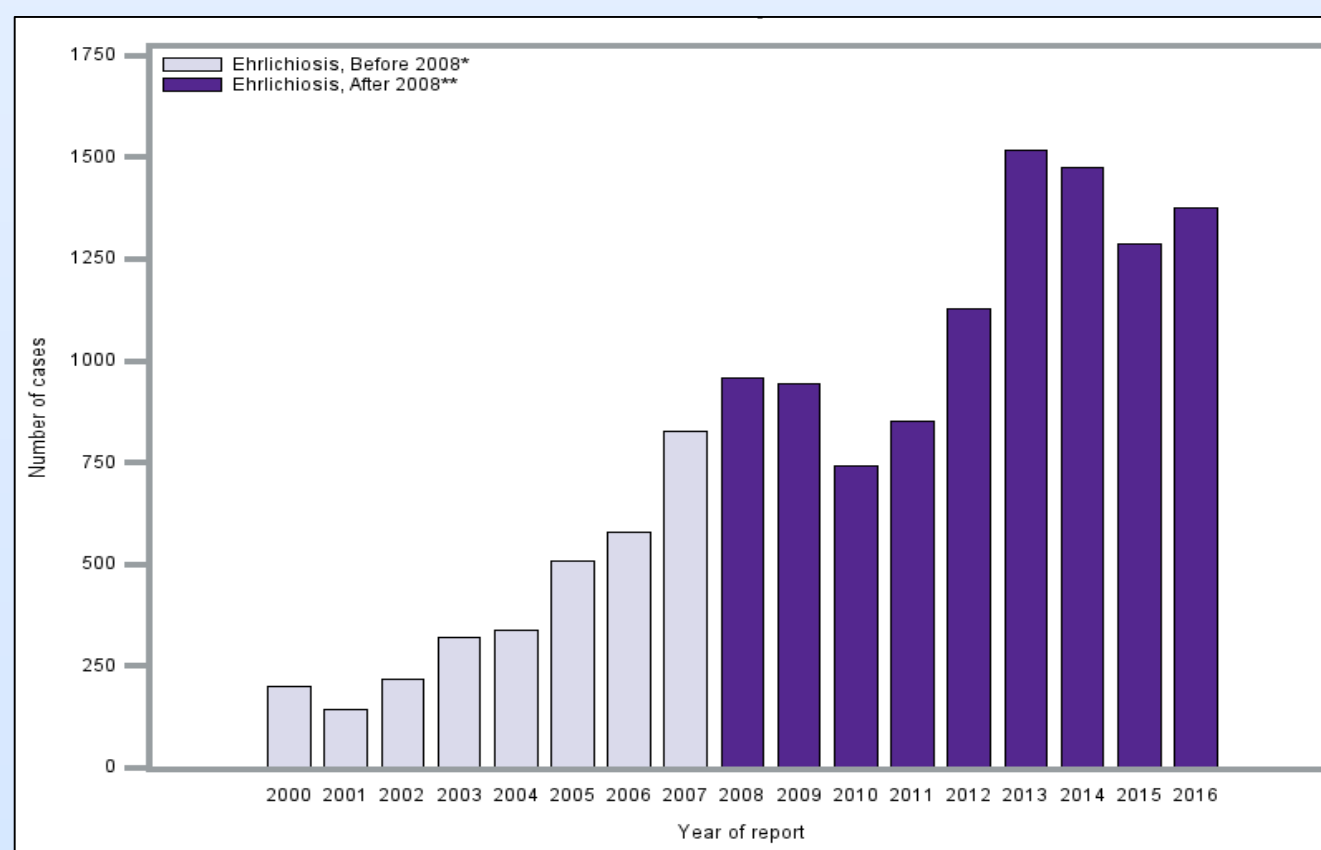
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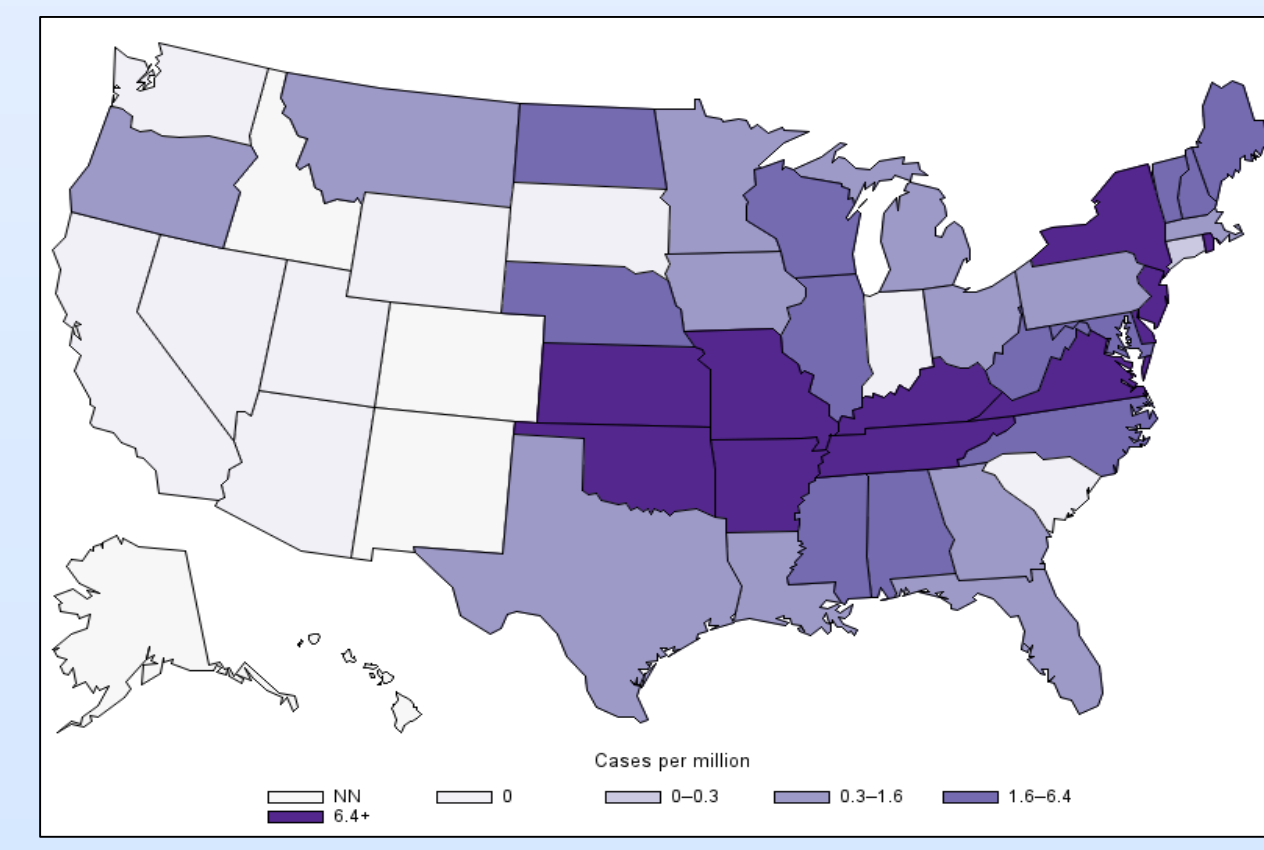
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Introduction

- **Human Monocytic Ehrlichiosis (HME) is a tick-borne disease caused mainly by Ehrlichia chaffeensis in the Northeast US.**
- **White tail deer are the main animal reservoir**
- **It is the adult nymphal lone star ticks that spread disease to humans and usually feed in the summer months.**
- **Individuals older than 60 years of age are reported to have a higher incidence of infection.**
- **Suffolk County, NY reports the highest amount of HME cases in NY (84 human cases in 2016).**
- **HME is often clinically characterized by fever, myalgias, and headaches along with abnormal laboratory results such as leukopenia, thrombocytopenia, and anemia.**



Number of U.S. Ehrlichiosis cases caused by Ehrlichia chaffeensis and reported to CDC 2000-2016



Annual reported incidence (per million population) for E. chaffeensis in the United States for 2010. CDC

Methods & Materials

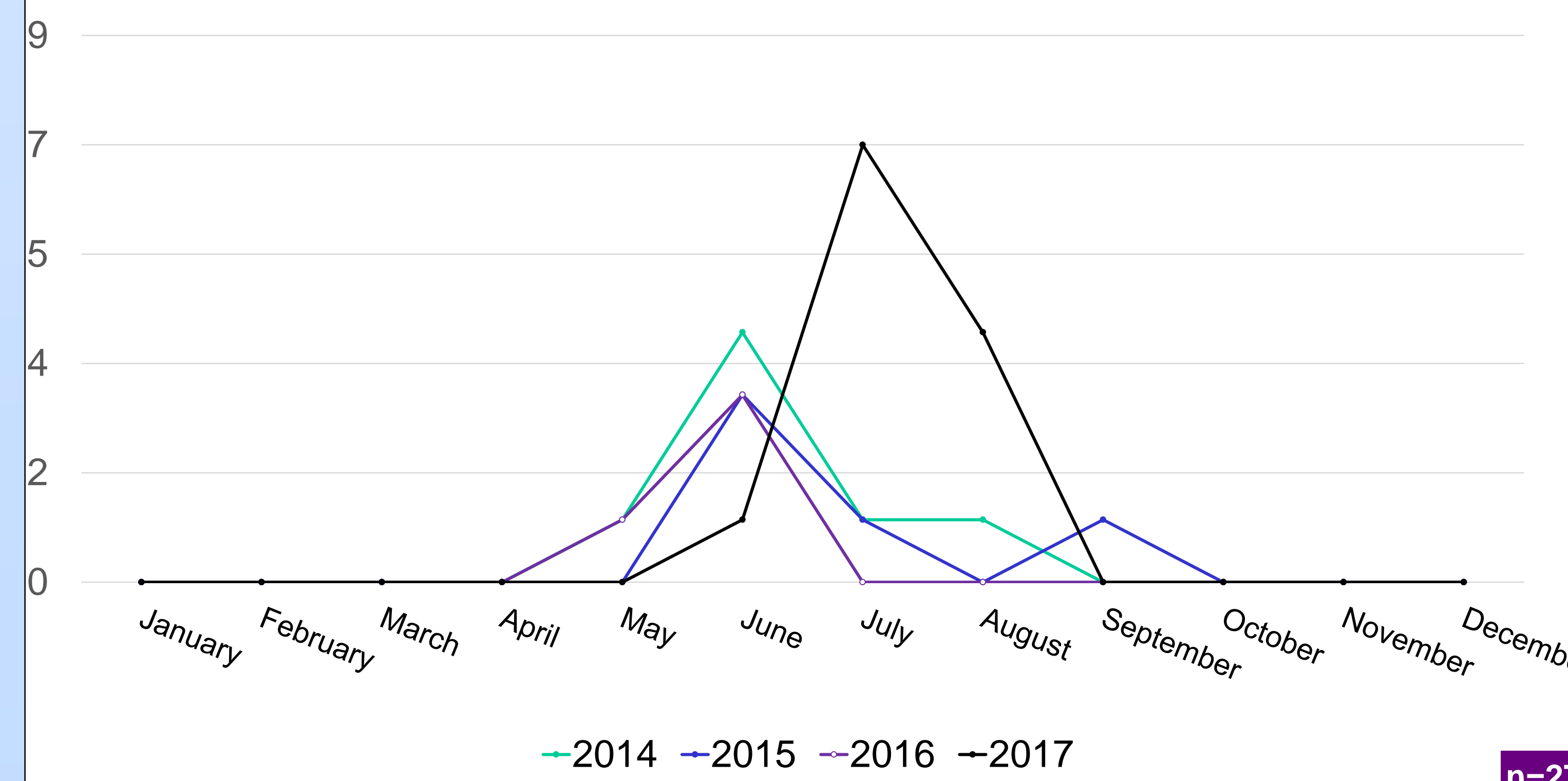
- **Study design: A retrospective chart review from January 1, 2014 to December 31, 2017 of 2 hospitals located in Suffolk County, NY.**
- **Study sites: Stony Brook University Hospital (SBUH) is a 603 bed tertiary care level I trauma center teaching hospital; and Stony Brook Southampton Hospital (SHH) is a 125 bed level III trauma center community hospital.**
- **Inclusion criteria:**
 - (1) ICD-9 code 082.4 or ICD-10 code A77.40;
 - (2) A positive blood test for E. chaffeensis by PCR;
 - (3) All patients ≥18 years.
- **Data were collected on demographics, clinical presentation, and laboratory results.**

Table 1. Patient Demographics and Clinical Features

	Group 1 (G1) Under 65 (n=10)	Group 2 (G2) 65 and older (n=17)	p-value
Median Age	57	79	
Standard Deviation	6.57	5.45	
Gender			
Male	8 (80%)	10 (58.8%)	NS
Female	2 (20%)	7 (41.2%)	NS
Ethnicity			
Hispanic	3 (30%)	0	0.02
Non-Hispanic	7 (70%)	17 (100%)	0.02
Clinical Symptoms			
Fevers	7 (70%)	12 (70.6%)	NS
Headaches/Dizziness	5 (50%)	7 (41.2%)	NS
Arthralgia	3 (30%)	2 (11.8%)	NS
Fatigue	10 (100%)	14 (82.4%)	NS
Myalgia	7 (70%)	4 (23.5%)	0.02
Rash	0	2 (11.8%)	NS
Tick exposure	4 (40%)	10 (58.8%)	NS
Results			
Leukopenia	7 (70%)	16 (94.1%)	NS
Anemia	3 (30%)	10 (58.8%)	NS
Thrombocytopenia	10 (100%)	17 (100%)	NS
AKI	4 (40%)	8 (47.1%)	NS
Hypoalbuminemia	5 (50%)	10 (58.8%)	NS
Transaminitis	8 (80%)	15(88.2%)	NS
Average Hospital Stay (Days)	4	3.2	NS

Statistically Not Significant (NS) | P>0.05

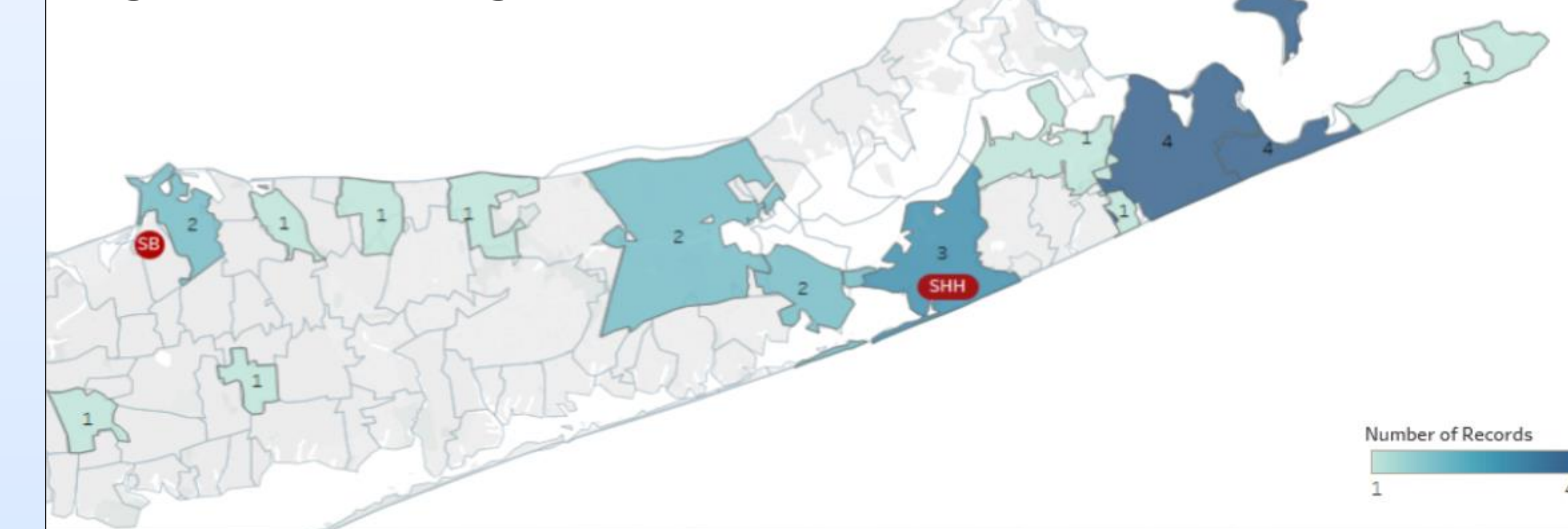
Fig 1. Number of Ehrlichia Admissions by Month, 2014-2017 in SBUH and SHH



Results

- **Ehrlichiosis cases have been rising from 2014 to 2017.**
- **Highest prevalence was reported in June and July.**
- **40-60% reported tick exposure (the rest did not recall a tick bite).**
- **Group 1 (younger group) was more likely to present with myalgia.**
- **Thrombocytopenia presented in all cases.**
- **Patients under 65 have higher likelihood of being Hispanic than those over 65.**
- **89% of cases required hospitalization.**

Fig 2. Geographic Distribution of HME on Long Island Presenting to SBUH and SHH



Conclusion

- **The number of cases have overall increased 6.0% per year between 2014 and 2017.**
- **There is a high prevalence of HME in Suffolk county, with increased incidence in the eastern area of Long Island.**
- **Absence of tick exposure should not exclude diagnosis of HME if other key clinical features are present.**
- **Clinical presentation and laboratory findings were similar between the two groups, but the younger population more often presented with myalgia to the emergency room.**
- **Young Hispanics are more likely to present with Ehrlichiosis to the emergency room than older Hispanics.**

References

1. Ehrlichiosis. Centers for Disease Control and Prevention. <https://www.cdc.gov/ehrlichiosis/symptoms/index.html>. Published January 21, 2016. Accessed September 15, 2018
2. Ismail N, Bloch KC, McBride JW. Human Ehrlichiosis and Anaplasmosis. Clinics in laboratory medicine. 2010;30(1):261-292. doi:10.1016/j.cll.2009.10.004.
3. Final Report of the Suffolk County Tick and Vector-Borne Diseases Task Force. Resolution#689-2011. December 2015