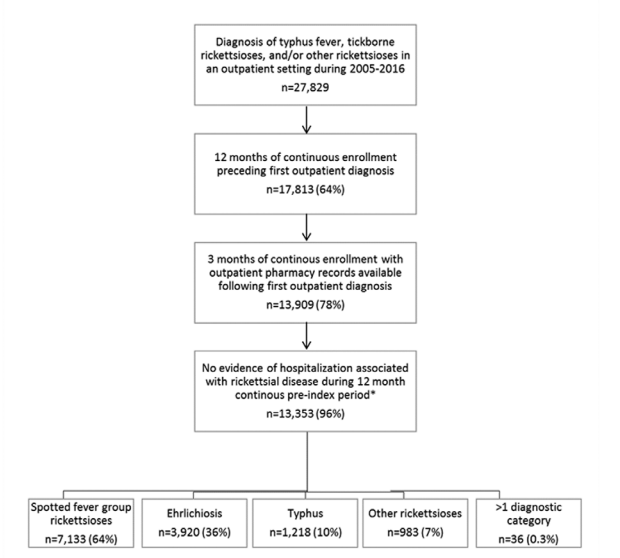
Background. Rickettsial diseases (RD) include Spotted Fever Group (SFG) Rickettsiosis, Ehrlichiosis, Anaplasmosis, Typhus Group (TG) and Rickettsialpox, among others. Doxycycline is the treatment of choice in all age groups; early treatment based on clinical diagnosis is important to prevent severe and fatal outcomes. SFG, Ehrlichiosis, and Anaplasmosis are nationally notifiable in the United States, but data on treatment patterns are not collected.

Methods. We conducted a retrospective analysis using Truven Health MarketScan® Commercial Claims and Encounters databases. We included any individual with an outpatient claim using an ICD-9/10-CM code for RD, who had one-year continuous pre- and 3 months post-diagnosis enrollment and pharmaceutical claim data. The first outpatient record with RD was considered the incident diagnosis, and those with an RD hospitalization in the prior 1 year were excluded. Epidemiologic characteristics, treatment patterns, and outcomes were summarized.

Results. 13,353 individuals were included; median age was 45 years (IQR: 28–55 years), 2,045 (15%) were under 18 years of age, and 51% were male. The most common diagnosis was SFG (7,133; 50%), followed by Ehrlichiosis (3,920; 30%), and Typhus (1,281; 10%); 36 individuals had >1 diagnosis. Over half (7,075; 53%) received doxycycline within 30 of the index date; of these, 3,634 (51%) received it within 14 days. The majority (5,369; 86%) were treated for at least 10 days at the recommended dose. The proportion with a pharmaceutical claim for doxycycline varied considerably across diagnoses and ranged from 24% for TG to 60% for SFG Rickettsiosis. Among the 6,278 (47%) without a claim for doxycycline, 2,185 (35%) were prescribed another antibiotic; 4,093 (28%) were not prescribed any antibiotic. Hospitalization within 30 days of the incident diagnosis was infrequent (149, 1.1%), and the majority were due to either SFR (40%) or ehrlichiosis (37%). No in-hospital deaths were recorded.

Conclusion. RD continues to be an important cause of disease in the outpatient population, but providers are still only prescribing the recommended treatment to about half of those in whom they suspect the disease. Continued education and increased awareness is critical to prevent severe outcomes from RD.

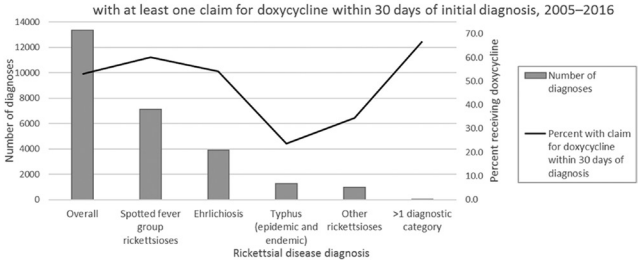
Figure 1. Study population and number of patients with diagnosis of Rickettsial Disease an outpatient setting in MarketScan database, United States, 2005- 2016



*n=14,476 (52%) of patients were excluded from analysis for at least one of the following reasons:

1) less than 12 months of continuous enrollment prior to initial outpatient Rickettsial disease diagnosis;
2) less than three months of continuous enrollment following initial outpatient Rickettsial disease diagnosis;
3) outpatient pharmacy records not available during entire 15 month enrollment period surrounding initial diagnosis; or
4) inpatient hospitalization associated with Rickettsial disease diagnosis identified during 12 month continuous enrollment period.

Figure 2. Number of Rickettsial Disease diagnoses by disease classification, and percent with at least one claim for doxycycline within 30 days of initial diagnosis, 2005–2016



Disclosures. **All authors:** No reported disclosures.

664. Factors Associated with the Need for ICU Care Among Patients with Human Ehrlichiosis

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Background. Despite the availability of effective therapy, the case fatality rate of human monocytic ehrlichiosis (HME) is 3%, and has been reported to be higher among the immunocompromised. Little is known about predictors of severe disease.

Methods. We performed an observational cohort study at a tertiary care medical center in Nashville, TN. Patients with a positive whole blood or cerebrospinal fluid *Ehrlichia* polymerase chain reaction between 2007 and 2017 were included. Clinical and demographic data were obtained by chart abstraction. Modified Poisson Regression was used to estimate the adjusted relative risk (aRR) of requiring intensive care unit (ICU) care, adjusting for age, sex, race, Charlson Comorbidity Index, immunosuppression, patient-reported tick exposure, and number of days from first contact with healthcare system to treatment initiation.

Results. We included 155 patients; median age was 48 years, 64% were male, 94% were Caucasian, 74% reported a tick exposure, and 21% were immunocompromised. 28% of patients required ICU care. Immunosuppression and reported tick exposure were associated with a decreased risk of requiring ICU care. An increasing number of days from first contact with the healthcare system to treatment initiation were associated with an increased risk of requiring ICU care.

Conclusion. Twenty-eight percent of patients required ICU care. We found that a delay in initiation of therapy was associated with an increased risk of requiring ICU care. In contrast to other studies, we found immunosuppression to be associated with milder clinical illness, perhaps reflecting a lower threshold to seek care and thus earlier presentation. Patients with recent tick exposure were also less likely to require ICU care, potentially reflecting a higher index of suspicion for HME among providers. Future studies evaluating the impact of provider education on early recognition and treatment may lead to a decreased need for ICU care in patients with HME.

Table 1: Modified Poisson Regression Model for Relative Risk of Requiring ICU Care

	Adjusted RR (95% CI)
Age (per year)	0.99 (0.97–1.01)
Female sex	1.38 (0.81–2.35)
White race	1.48 (0.74–2.94)
Immunosuppression	**0.39 (0.17–0.88)**
Charlson Comorbidity Index (per 1)	1.15 (0.95–1.38)
Patient-reported tick exposure	**0.56 (0.34–0.91)**
Days from first contact to treatment initiation	**1.07 (1.03–1.12)**

Disclosures. **All authors:** No reported disclosures.

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

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Background. Human monocytic ehrlichiosis (HME) is a tick-borne disease caused by *Ehrlichia chafeensis* in the northeast United States. Suffolk County, New York has the highest amount of HME cases in NY (176 from 2010 to 2014). Our aim is to identify risk factors for HME and compare clinical presentation and laboratory findings of young vs. older adults.

Methods. A retrospective chart review from January 1, 2014 to December 31, 2017 was performed on all patients ≥18 years who presented to the ER at Stony Brook University Hospital (SBUH) or Stony Brook Southampton Hospital (SBSH) with (i) ICD-9 code 082.4 or ICD-10 code A77.40 and (ii) a positive *E. Chafeensis* PCR. Data were collected on demographics, clinical presentation, and laboratory results.

Results. Twenty-seven cases of HME were found and separated into Group 1 (G1, n = 10) or Group 2 (G2, n = 17) based on age (Table 1). G1 had a significantly higher chance of being Hispanic than G2. Twenty-four of the 27 patients (89%) were hospitalized with an average length of stay of 3.4 days (range 1–14 days).The only significant difference in clinical presentation was that G1 was more likely to have myalgia (P = 0.02). 40% or more of patients in both groups presented with an acute kidney injury and the average length of hospital stay in days was 4.0 ± 2.9 and 3.2 ± 3.1 for G1 and G2, respectively. The number of cases overall have increased 6.0% per year between 2014 and 2017. Thrombocytopenia presented in all cases.