Themes and key clinical questions asked during outbreaks of SARS and MERS

Theme	Key question(s)	Objective
Clinical characterisation	What is the clinical presentation and spectrum of disease?	Determine symptomology, progression of disease, laboratory findings, and radiological features in different patient groups (adults vs. children, immunosuppressed patients) and identify early presenting symptoms
Prognosis	What are the risk factors for death or severe illness?	Identify factors such as comorbidities, demographic factors, test parameters, etc. that predict death, ICU admission, etc.
Clinical management	What treatments are effective for MERS/SARS patients? What is the role of antivirals in treatment? What is the role of steroids in treatment?	Determine the role of antiviral treatments, steroid treatments, or combination in comparison to supportive therapy
Diagnosis	What is the optimal diagnostic test for detecting the virus?	Evaluate sensitivity/specificity/positive predictive value/negative predictive value of different diagnostic assays such as real-time RT-PCR and ELISA
Viral pathogenesis	What is the duration of viral shedding?	Determine the viral shedding profiles over time and in different body fluids
Epidemiological characterisation	What characteristics define a "case"?	Develop criteria for suspected, probable, and confirmed cases
Infection prevention and control / Transmission	What are the risk factors which pre-dispose health care workers to infection or transmission?	Determine the activities or prevention measures that are correlated with protection or infection in health care workers
Susceptibility	What are the risk factors for infection? (patient population)	Determine the risk factors for patient infection, in the community and health care setting
Psychosocial	What are the psychosocial consequences of infection with the virus?	Determine effect of illness, treatment, and isolation procedures on the psychological and social well-being of those infected

Conclusion: The thematic analysis was used to identify the key clinical research questions asked during outbreaks of SARS-CoV and MERS-CoV and study designs were recommended to answer these questions. By defining the key clinical research questions, this study provides a first step in creating standardized clinical research protocols and defining core data variables to be collected during future outbreaks of respiratory coronaviruses.

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1428. Lyme Disease Treatment in the United States: Prescribing Patterns from a Nationwide Commercial Insurance Database, 2016-2018

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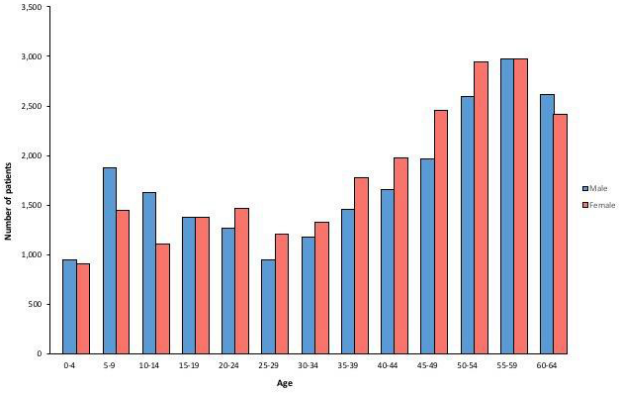
Background. Lyme disease (LD) is the most common vector-borne disease in the United States and is a significant public health problem. The use of non-standard antibiotic treatment regimens for LD has been associated with adverse effects; however, the overall landscape of treatment has not been described previously. We aimed to describe real-world antibiotic prescribing patterns for LD.

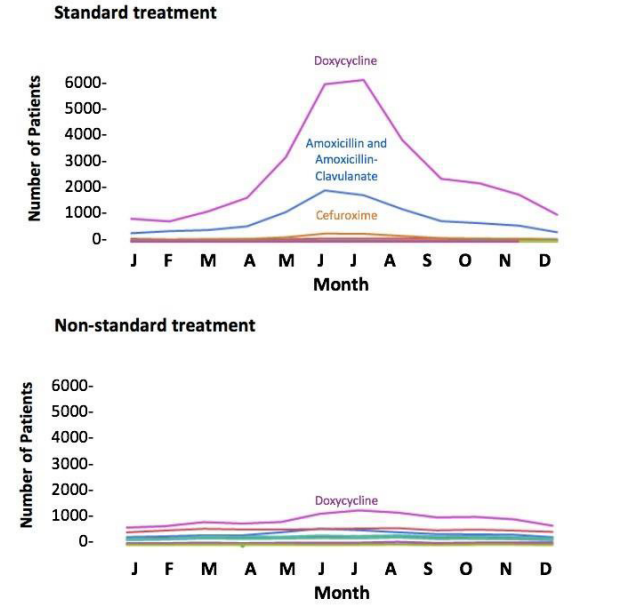
Methods. We performed a retrospective analysis of the MarketScan commercial claims database of outpatient encounters from 2016-2018 in the United States. We identified all individuals with a visit that included an LD diagnosis code and a prescription within 30 days of the visit for one or more of 12 antibiotics that may be prescribed for LD. We then categorized each individual as having received either standard or non-standard treatment during the two-year period. Standard treatment was defined as treatment with a first, second or third-line antibiotic for LD, for no longer than 30 days, and for no more than two episodes during the study period. Descriptive and multivariable analyses were performed to compare characteristics of people who received standard vs non-standard treatment for LD.

Results. A total of 84,769 prescriptions met criteria for inclusion, written for 45,926 unique patients. The mean duration of prescriptions was 21.4 days (SD 10.8). Most individuals (84.5%) treated for LD received standard treatment during the study period. Female gender (OR 1.5, p< 0.0001) and age 19-45 (p=0.0003) were significantly associated with being prescribed non-standard LD treatment. Treatment in low-incidence states (OR 2.2 compared to high-incidence states, p< 0.0001) and during non-summer months (OR 2.2, p< 0.0001) was more likely to be non-standard.

Age distribution of patients receiving treatment for Lyme disease, by gender and age at first prescription



Seasonality of standard versus non-standard treatment of Lyme disease



Conclusion: In this population of employed, young, and insured patients, young and middle-aged women were at the highest risk of receiving non-standard LD treatment. Treatments prescribed in states with low incidence of LD or during non-summer months were also more likely to be non-standard, a trend which likely reflects misdiagnosis or overtreatment of LD. Future studies are needed to further define prescriber and patient factors associated with non-standard LD treatment and related adverse outcomes.

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1429. Meningococcal Disease Outbreak in a Refugee Reception Identification Center in Greece and Administration of Mass Antibiotic Prophylaxis

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