*Background.* *Yersinia pestis* remains endemic in countries throughout Africa, Asia, and the Americas and is a tier 1 bioterrorism agent. Antibiotic treatment with aminoglycosides such as streptomycin or gentamicin is effective when initiated early in the course of illness but can have serious side effects. Alternatives such as fluoroquinolones, tetracyclines, and sulfonamides are potentially safer but currently lack robust human data on their efficacy.

*Methods.* We searched PubMed Central, Medline, Embase, CINAHL, and other databases for articles in any language with terms related to plague, *Yersinia pestis,* and antibiotics. Articles that contained case-level information on antibiotic treatment and patient outcome were included. We abstracted information related to patient demographics, clinical features of plague, treatment, and survival using a standardized form.

*Results.* Among 4,874 articles identified and screened, we found 723 published cases of treated plague reported between 1937 and 2016. Fifty-two percent of patients were male; median age was 22 years (range: 8 days-80 years). Cases were most commonly reported from the United States (21%), India (13%), China (11%), Vietnam (10%), and Madagascar (10%). Overall, the case fatality rate was 21%. The majority of patients had primary bubonic (64%), pneumonic (21%), or septicemic (4%) plague, of which survival was 83%, 71%, and 55%, respectively. Among those treated with an aminoglycoside ($n$ = 386, 53%), survival was 86%. Among those treated with a tetracycline ($n$ = 145, 20%), fluoroquinolone ($n$ = 45, 6%), or sulfonamide ($n$ = 311, 43%), survival was 90%, 84%, and 77%, respectively. Survival rates did not substantially differ between patients treated with one vs. two classes of antibiotics (table).

*Conclusion.* Published cases of treated plague offer an opportunity to evaluate the treatment efficacy of different antibiotic classes. In addition to aminoglycosides, tetracyclines, fluoroquinolones, and sulfonamides appear to be effective for plague treatment, although publication bias and low numbers in certain treatment groups may limit interpretation.

*Disclosures.* All authors: No reported disclosures.

## 1637. Antibiotic Use in Lower Respiratory Tract Infections: Insights From Patient Interviews in Sri Lanka

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*Background.* Antibiotic resistance is an emerging global public health threat with inappropriate use of antibiotics as one of the major drivers. In Sri Lanka, antibiotic consumption is increasing, while little is known about how patients perceive antibiotics. We conducted a qualitative study to better understand patients' knowledge, perceptions, and attitudes toward antibiotics.

*Methods.* Semi-structured interviews were conducted in the local language (Sinhala) and audio recorded for 18 patients with lower respiratory tract infections (LRTI) admitted to a large, public tertiary care hospital in southern Sri Lanka. Interviews were transcribed and then translated into English. Translated interviews were analyzed for themes regarding care-seeking behavior, patients' knowledge of disease etiology and treatment of LRTI.

*Results.* Almost all patients mentioned multiple care visits and polypharmacy prior to admission. When seeking care, patients mainly focused on finding a quick cure, mostly by visiting several different private physicians. However, self-medication was also common. Patients reused prescriptions for antibiotics, kept antibiotics for later use after prematurely stopping their course of treatment and bought antibiotics over-the-counter. Patients' knowledge of disease etiology and antibiotics was poor. Most patients described non-microbial causes such as exposure to dust and cold weather for their illness. Only a few patients were aware of antibiotic resistance. Despite the desire to receive more information regarding disease and treatment, transfer of information between patients and physicians was limited and mainly confined to prescription instructions.

*Conclusion.* This qualitative study in Sri Lanka suggests inappropriate use of antibiotics is a multifactorial problem. Patients' poor knowledge of disease and treatment, poor information transfer between physicians and patients, high demand for medicines, overprescribing by physicians, and self-medication were found as possible obstructive factors to improve antibiotic usage. To improve antibiotic use, a multifaceted approach is needed with improvement of awareness by patients, public, and physicians regarding antibiotic use and antibiotic resistance.

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## 1638. Measles Outbreak Risk Assessment for Transplant Candidates and Recipients

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*Background.* A measles outbreak began in 2018 with ongoing transmission in the New York City (NYC) area, affecting children and vulnerable adults. We developed a systematic 3-part approach to address measles risk in our solid-organ transplant program's adult population by 1) identification of non-immune adults living in at-risk ZIP codes 2) education focused on risk reduction for all at-risk patients and families and 3) vaccination of non-immune waitlisted patients and consideration of prophylactic immunoglobulin G (IgG) for post-transplant non-immune patients at high risk for measles exposure.

*Methods.* All waitlisted and transplanted patients residing in any of 11 ZIP codes with recent measles cases in the NYC area as of April 4, 2019, were included. We also focused on the 4 ZIP codes in the NYC Health Commissioner's vaccination order from April 9, 2019. We reviewed electronic medical records (EMR) of patients born after 1956 for measles immunity by serology or vaccine documentation. A 1-page measles patient education handout was created, reviewed for health literacy appropriateness and utilized in English and non-English language versions.

*Results.* 118 waitlisted or previously transplanted patients resided in at-risk ZIP codes. Among the 118 patients, 56 (47.5%) were presumed immune based on birth year before 1957. Among 62 patients born in 1957 or later, 5 (8.1%) had preexisting positive measles IgG in the EMR and 1 patient had documentation of measles vaccination without measles IgG testing. Fifty-seven patients without EMR evidence of measles immunity were called to undergo measles IgG testing. 29 patients agreed to testing and an additional 19 patients had the test added to routine laboratories. Of these 48 patients, 1 was non-immune and 1 had equivocal immunity. Among transplanted patients identified as non-immune or with equivocal immune status, a recommendation for prophylactic IgG was made. All 118 patients received a measles informational handout by mail. Furthermore, we identified 21 patients born after 1956 living in the 4 zip codes targeted by the NYC health Commissioner's order, and among those tested all were found to be immune.

*Conclusion.* A systematic risk assessment during a large measles outbreak identified at-risk transplant patients and provided timely education and screening for measles immunity.

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## 1639. Outbreak of Human Bartonellosis Due to *Bartonella bacilliformis* in the Ecuadorian Andes

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*Background.* Bartonellosis affects small Andean communities in Peru, Colombia, and Ecuador. Research in this area has been limited; our study presents a continuous outbreak of cases that occurred in 2018 in areas near the cloud forest of the Ecuadorian Andes.

*Methods.* Retrospective review of 101 cases of human bartonellosis managed in Quito - Ecuador, during the last outbreak in our country in the last year (2018). The study focused upon the most recent outbreak in order to look at current manifestations of disease and existing practices in diagnosis and management, and how closely these followed the latest guidelines to manage this disease.

*Results.* Of the 101 patients reviewed, 52% were male and 48% were female. The mean age of cases was 24.3 years, (mean age of males = 23.7, mean age females = 25.3). The median age of patients was 20 years (min = 4 years, max = 71 years, IQR = 15). There was a peak in acute cases after the rainy season; mainly in moths march to June, chronic cases presented less constantly throughout the year. The sensitivity of blood smear against blood culture in acute disease was 35%. The most commonly used treatment for chronic disease was rifampicin; chloramphenicol and ciprofloxacin was used to treat most acute cases. Complications arose in 16.8% and the most frequent was anemia, and there were 2 deaths.

*Conclusion.* Recognize the physiopathological and microbiological characteristics of the disease, as well as improve the diagnostic and treatment algorithms for acute and chronic bartonellosis which have been developed without a strong evidence base. Preparation of ready-to-go operational research projects for future outbreaks would strengthen the evidence base for diagnostic and treatment strategies and enhance opportunities for control and prevent deaths.