

of piped water in El Salvador is by the 'Administración Nacional de Acueductos y Alcantarillados' (ANDA) agency in EL Salvador, contracted decentralized operators, and/or non-decentralized operators. Descriptive statistics was done to understand the study population and logistic regression was conducted to determine the association between STHI infection and drinking water supply in the study population.

Results. Of the 1310 children, 49.01% ($n = 642$) were male and 30.46% ($n = 399$) were 8 year olds. The prevalence of STHI infections in the study population was 2.75% for *Ascaris lumbricoides*, 4.10% for *Trichuris trichiura*, and 1.83% for hookworm. Source of drinking water supply was significantly associated with STHI infection in the study population. Compared with individuals who resided in areas supplied by ANDA, individuals who resided in areas supplied by the decentralized operators under contract management were four times more likely to be infected with *Ascaris lumbricoides*. While amongst individuals who resided in areas receiving drinking water through piped supply by decentralized operators under contract management, the risk of infection was 2.8 times higher than amongst those who resided in areas receiving drinking water through piped supply by decentralized operators not under contract management.

Conclusion. Our results show that there is a significant association between the piped drinking water supply and *Ascaris lumbricoides* infection in the study population.

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288. Community Health Workers Can Strengthen Isoniazid Preventive Therapy Implementation in Rural KwaZulu-Natal, South Africa

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Background. Tuberculosis (TB) remains one of the top 10 causes of death globally, disproportionately affecting HIV-infected individuals. South Africa has the sixth highest TB incidence rate in the world at 834/100,000 and 60% of TB cases are HIV coinfecting. The WHO highlights isoniazid preventive therapy (IPT) as a major strategy to combat HIV-associated TB. Community health workers (CHWs) have been utilized in the differentiated care models for HIV treatment programs; pilots have shown their efficacy in screening for TB. No studies have evaluated CHW's role in implementing IPT. This study explores the potential role of CHWs in expanding IPT in rural KwaZulu-Natal, South Africa.

Methods. The study was conducted in the Msinga sub-district where CHWs were provided training in multidisease screening including HIV, TB, hypertension, and diabetes mellitus, and educated on the nuances of IPT eligibility. CHWs screened up to 30 individuals a month. The primary outcome was the proportion of patients who were HIV(+) and TB(-) identified by CHWs as eligible for IPT and subsequently referred for care. The secondary outcomes included the percentage of those referred for IPT that were linked to care and the percent initiated on IPT.

Results. Among 1279 individuals screened for HIV and TB December 2015–September 2016, 213 (16.7%) were HIV positive and had a negative TB symptom screen. Of those, 114 (54.5%) were currently on IPT or had been on IPT in the last 12 months and were thus not eligible for preventive treatment. Of the remaining 99 community members eligible for IPT, CHWs referred 46 (46.5%). For those referred, median age was 39 (IQR 30–48) and 91.3% were female. Of those, 29 (63%) linked to care and 11 (23.9% of all referred and 37.9% of those linked to care) initiated treatment.

Conclusion. In rural areas of KwaZulu-Natal, South Africa, CHWs have the capacity to not only screen for infectious and chronic disease, but to simultaneously evaluate for prevention opportunities, such as for IPT. Further research exploring barriers to IPT initiation in rural areas and resource limited settings should be prioritized to inform the role that CHWs can play in implementing IPT. Future efforts should focus on closing the gaps in the IPT cascade of care in order to maximize the impact of IPT on the TB epidemic.

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289. Frequency of Combination Medications Associated with QTc Prolongation in a Travel Clinic

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Background. A common practice during a travel medicine clinic visit is to provide an antibiotic prescription for stand-by treatment of moderate-to-severe traveler's diarrhea. Ciprofloxacin/levofloxacin or azithromycin are often used for this purpose. These antibiotics have been implicated in prolonging the QTc interval. Medication lists of travelers can include non-antibiotic agents that can prolong the QTc interval as well. Hence, situations with cumulative QTc prolongation by multiple agents, with an attendant risk for associated arrhythmia, may be relatively common. They may warrant further risk assessment by the provider, such as obtaining an EKG. We quantified the frequency of potential drug–drug interactions in Travel Clinic patients in a retrospective review of a random 3-month cohort of patients who visited our Travel Clinic in 2016, and how often particular medications were prescribed. Whether an EKG was recommended by the provider because of perceived cumulative medication-related risk of QTc prolongation was recorded.

Methods. A chart review, including medication lists, occurred for 158 consecutive patients who visited our Travel Clinic in a 3-month period. The number of patients taking specified medications with potential for QTc prolongation at the time of their Travel Clinic visit and the frequency of specific agents were tallied. Whether EKGs were recommended was recorded.

Results. 23/158 travel clinic patients (14.6%) were taking antidepressant medications with at least moderate potential for QTc prolongation when combined with a quinolone or azithromycin. An additional nine patients (5.7%) were prescribed multiple other agents with QTc prolongation potential at the conclusion of their Travel Clinic visit. An EKG for risk assessment was recommended by the Travel Clinic provider for seven patients (4.4%).

Conclusion. Travel Clinic patients often are prescribed medications that may enhance the QTc prolongation potential of antibiotics used for stand-by treatment of traveler's diarrhea. Possible drug–drug interactions that could increase risk for an arrhythmia warrant a careful medication history and risk assessment in the clinic.

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290. Clinical and Epidemiological Characteristics of Japanese Spotted Fever and Scrub Typhus in Central Japan, 2004–2015

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Background. Japanese spotted fever (JSF) and scrub typhus (ST) are endemic rickettsial diseases in Japan. Both diseases potentially have a fatal outcome. Since no studies have specifically compared JSF with ST, we investigated the clinical and epidemiological characteristics of JSF and ST in the area where both are endemic.

Methods. We systematically collected clinical and epidemiological data from all patients clinically suspected with rickettsial diseases at three medical facilities in Boso Peninsula of Japan between 2004 and 2015. Indirect immunofluorescence assays were used, and eschar PCR/immunoperoxidase assays were also used for identifying the strain. SatScan™ was used for spatial cluster analysis.

Results. In total, 661 patients were enrolled, 44% were female, and the mean age was 64 years. Thirty-two patients were diagnosed as JSF, 204 were ST, and 97 were non-rickettsial diseases. Only one patient died of ST. Comparing to non-rickettsial diseases, patients with JSF and ST were significantly older, and more of them resided wooded area ($P < 0.001$). Spatial clusters were identified for both JSF ($P < 0.001$) and ST ($P < 0.05$). JSF occurred from April to October with a small peak in July, while 90.2% of ST was diagnosed in November and December. Both rash and eschar were detected in the majority of JSF (97%, 86%) and ST (96%, 87%). When compared with ST, purpura, and the rash on palms/soles were strongly associated with JSF (OR, 29.0, 61.1, respectively). However, patients were much less likely to complain their rash (27% JSF, 44% ST) and eschar (0% JSF, 2.5% ST). Moreover, 26% of JSF and 28% of ST cases did not present with apparent fever ($\geq 37.5^\circ\text{C}$). All identified ST strains were Irie/Kawasaki (16/22, 73%) or Hirano/Kuroki (6/22, 27%).

Conclusion. Although clinical picture of JSF and ST are similar, there are some clues to distinguish JSF from ST such as seasonality, geographical region, rash distribution on palms/soles, and the hemorrhagic nature of rash. Rickettsial cases may be underdiagnosed if clinical diagnosis relies on fever, rash, and eschar.

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291. Clinico-Epidemiological Profile of Adolescent and Adult Patients with Tegumentary Leishmaniasis from the Colombian Southwest 2004–2014: Considerations for Local Therapies

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Background. Systemic treatments for Cutaneous Leishmaniasis (CL) have many limitations. Local therapies are an alternative option for this disease. Available Pan-American Health Organization (PAHO) and World Health Organization (WHO) treatment guidelines were designed based on expert opinion considering clinical criteria for local treatment which influences feasibility of implementation of these treatment modalities. In this study, we evaluated the clinico-epidemiological profile and the eligibility for the use of local therapies with current guidelines of patients with CL at the Centro Internacional de Entrenamiento e Investigaciones Médicas (CIDEIM) from 2004 to 2014.

Methods. A descriptive study was conducted based on clinical records of adolescents (≥ 12 years) and adults (≥ 18 years) with confirmed parasitological diagnosis of tegumentary leishmaniasis. Incomplete or unconfirmed records were excluded. We applied WHO criteria (≤ 3 lesions, longest diameter < 5 cm, no disfiguring/incapacitating potential, no immunosuppression) and PAHO (single lesion, diameter ≤ 3 cm, any location except head and joints, absence of immunosuppression) to assess eligibility for local treatment.

Results. Among 3,691 records, a total of 1,834 met inclusion criteria. Fourteen percent of records were from adolescent patients and 86% were adults, all from southwestern Colombia. Regarding the clinical presentation of patients, most (57.3%) had a single

lesion and 86.2% had ≤ 3 lesions with a median = 2 cm (IQR 1–2). Lesions presented predominantly on upper limbs (40.9%), followed by lower limbs (23.2%). According to PAHO and WHO criteria, 18% (12.3% adult vs. 19.3%, $P = 0.007$) and 44.4% (adolescents 42% vs. adults 43%, $P = 0.45$), respectively, were eligible for local therapies.

Conclusion. Local therapies have feasible use in this population with mild and uncomplicated clinical presentation; however, its applicability is limited to current management criteria. Individualized risk–benefit assessment may increase eligibility.

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292. Systemic Cat Scratch Disease in Immunocompetent Adults: A Retrospective Case Series

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Background. Cat-scratch disease (CSD) has worldwide distribution and is the most frequent presentation of Bartonella henselae infection. Systemic CSD has mainly been reported in immunocompetent children and immunosuppressed adults. The aim of this study was to assess the clinical and laboratory findings of systemic CSD in immunocompetent adults.

Methods. A retrospective, cohort study of all consecutive, immunocompetent adult patients diagnosed with systemic CSD in 10-year period (2007–2016), was conducted at the University Hospital for Infectious Diseases Zagreb. Diagnosis was established by serology (IgM > 1:20, IgG > 1:256 or the fourfold rise in IgG titer in the convalescent phase) or polymerase chain reaction (PCR).

Results. In total, 32 cases were identified, 23 males, mean age of 35 ± 16 years, and majority of them (96.9%) recalled cat exposure. Twenty-one patients (65.6%) presented as fever of unknown origin, nine (28.1%) with hepatosplenic form, one patient with oculoglandular with prolonged fever and one with parotitis. Thirty-one (96.9%) patients were febrile for the 8.4 ± 5.6 days before hospitalization. Only 18.8% had concomitant lymphadenitis, 59.4% had headache, 28.1% abdominal pain and respiratory symptoms, 37.5% hepatomegaly and 31.3% splenomegaly on clinical examination. All except one patient had elevated CRP (70.8 ± 46.9), 12 patients (37.5%) had elevated WBC, 7 patients (21.8%) had elevated aminotransferases, and 4 patients (12.5%) had multiple spleen abscesses. The diagnosis was established after 5.2 ± 5.3 days of hospitalization. Thirty (93.7%) received antibiotic treatment for the mean duration of 11.4 ± 5.2 days (18 (56.2%) macrolides (3 in monotherapy), 16 (50%) β -lactams (in combination), three (9.37%) doxycycline monotherapy, five (15.6%) fluorquinolones (2 in monotherapy), four (12.5%) rifampicin, and five (15.6%) gentamicin always in combination). The mean duration of fever on antibiotic therapy was 7.3 ± 5.8 days. All patients were cured without sequelae regardless of treatment.

Conclusion. Systemic CSD is not rare in healthy individuals. Since the diversity of the clinical manifestations in adults may be misleading, the infection should be suspected in patients with recent contact with a cat even despite the presence of lymphadenopathy.

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293. What Is Different When Dealing with Bacteremic Brucellosis?

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Background. Bacteremic brucellosis is an acute febrile disease often associated with digestive complaints and biological inflammatory syndrome. In this perspective, our study aimed to determine predictive factors of bacteremia in patients with brucellosis.

Methods. We conducted a retrospective study including all patients hospitalized with brucellosis between 1990 and 2014.

Results. We included 161 cases of brucellosis among which bacteremia was documented in 30 cases (18.6%). Mean age was of 39.6 ± 17 years. *Brucella melitensis* was solely isolated. In bacteremic brucellosis, there were more fever (93.3% vs. 78%; $P = 0.049$; HR=4), nausea (16.7% vs. 4.6%; $P = 0.033$; HR = 4.2), and splenomegaly (20% vs. 7.6%; $P = 0.049$; HR = 3). The acute form was significantly more common in bacteremic brucellosis (66.7% vs. 42%; $P = 0.015$; HR = 2.7). Bacteremic brucellosis patients had a significantly higher frequency of anemia (76.7% vs. 51.6%; $P = 0.013$; HR=3.2) and higher C-reactive protein value (85.5 ± 45 vs. 35 ± 20 mg/L; $P < 0.001$). Commonly used antimicrobial regimens consisted of rifampicin plus doxycycline given for 6 weeks in both bacteremic and non-bacteremic brucellosis (86.7% vs. 72%; $P = 0.1$). A favorable outcome was significantly associated with bacteremic brucellosis (73.3% vs. 52%; $P = 0.03$; HR=2.38). Multivariate analysis using logistic regression revealed that the presence of nausea (HR = 9; CI95% 14–60; $P = 0.002$), acute form of brucellosis (HR = 4.5; CI95% 1.2–17; $P = 0.025$) and C-reactive protein value (HR = 1.12; CI95% 1.1–1.2; $P = 0.02$) were independent predictors of bacteremic brucellosis.

Conclusion. Our study highlighted clinical and biological particularities of bacteremic brucellosis which may help clinicians to establish a prompt diagnosis and suitable treatment, two main conditions to improve patients' prognosis.

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294. Follow-up Evaluation of Air Force Blood Donors Screening Positive for Chagas Disease

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Background. Chagas disease, caused by the protozoan parasite *Trypanosoma cruzi*, is endemic to Texas and has significant morbidity associated with its cardiac pathology. The Joint Base San Antonio-Lackland (JBASA) represents a healthcare system with universal coverage to its beneficiaries and its blood bank screens all first-time blood donors for *T. cruzi* infection. Although there is a published, standardized approach for diagnosis and evaluation of Chagas disease in the United States, adherence to this approach has not been studied.

Methods. A retrospective chart review was performed on all persons who screened positive for *T. cruzi* on blood donation at JBASA from 2014 to 2016. Charts were reviewed to determine frequency and results of confirmatory testing, history and physical, EKG, and 30 second rhythm strip; outcomes of these evaluations were ascertained. Chagas disease was considered confirmed on the basis of positive EIA and TESA testing from the CDC and/or two different positive serologic tests.

Results. Of the 43,402 blood donors at JBASA, 23 screened positive for Chagas disease. Follow-up information was available on 22 (95.7%). Seventeen (77%) were military trainees and 18 (82%) were male. Patients had a mean of 2.5 (range 1–5) additional serologic tests, with 13 different combinations of confirmatory tests ordered, including 17 (77%) who had the initial screening test repeated. Two patients (9%), both from Texas, met criteria for Chagas disease. One of these was diagnosed with cardiomyopathy and underwent administrative separation from the Air Force. Eleven (50%) had Chagas disease excluded on the basis of two negative follow-up tests, and 9 (41%) had one negative follow-up test. All underwent history and physical, 15 (68%) had an EKG, and 5 (22%) had a 30 second rhythm strip. Fourteen (64%) were referred to infectious diseases.

Conclusion. Among a small cohort of active duty service members who screened positive for *T. cruzi* infection on blood donation, diagnostic workup, and evaluation varied considerably, despite universal access to no-cost medical care within a single system. Opportunities exist within the military health system to decrease heterogeneity and to improve evaluation of persons who screen positive in the future.

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295. Primary Care-Based Screening for Trypanosoma cruzi in High-Risk

Populations: Results of the Strong Hearts Pilot in East Boston, Massachusetts

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Background. More than 300,000 people in the United States may be infected with *Trypanosoma cruzi*. This study describes the results of the Strong Hearts pilot project to integrate screening and facilitate referral for treatment for *T. cruzi* infection into primary care settings serving patients at high risk in Massachusetts.

Methods. We partnered with the Medicine, Pediatrics, Obstetrics, and Family Medicine divisions at the East Boston Neighborhood Health Center. Continuing education about Chagas disease was offered to healthcare providers, and community outreach to educate at-risk individuals and families was initiated. One-time screening for all patients under 50 years of age who lived in Mexico, South or Central America for at least 6 months was recommended. The initial screening test was an ELISA performed by a commercial laboratory. Confirmatory testing was performed at the Centers for Disease Control and Prevention (CDC) using serum saved at the health center laboratory. Patients with two positive tests were referred to the Infectious Disease Department of a partner institution for further evaluation and treatment.

Results. Three screening tests were ordered at the health center in the 3 months before the pilot. During the first 6 weeks of the pilot, participating providers ordered 203 screening tests. The patients screened included 90 (44%) women and 113 (56%) men; 90 (44%) were from El Salvador and 46 (23%) from Colombia. Thus far, results are available for 123 tests, among which 118 are negative and five are positive (one confirmed positive, one confirmed negative, and three pending). Two patients have been referred and seen by the partnering ID clinic, both within 6 weeks of the initial screening test.

Conclusion. The burden of Chagas disease may be underappreciated even in facilities that serve high-risk patients. Our preliminary findings suggest that primary care-based screening for Chagas disease is feasible and embraced by providers and patients, in the context of appropriate education and a seamless system for referral and treatment.

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