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Yellow fever in São Paulo State, Brazil: epidemiological surveillance during the largest outbreak reported, 2016–2018

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Purpose: Yellow fever is a reemergent infectious disease considered as an important public health threat by the WHO International Health Regulations. The State of São Paulo (BR) has been observing a sylvatic yellow fever since April 2016 when the first case was confirmed, after seven years without registering cases. The objective of this study is to describe the human autochthonous cases of sylvatic yellow fever in the State of São Paulo between April 1, 2016 and June 15, 2018.

Methods & Materials: This is a descriptive, cross-sectional study that uses secondary data from the zoonosis division of the Center for Epidemiological Surveillance. The frequency, incidence and central tendency were calculated by the program EpiInfo™ vs 7.2.0.1.

Results: During the period of study, 560 cases of human yellow fever were confirmed in 76 municipalities, mostly located in the northeast and southeast regions of the State. The incidence rate per 100,000 inhabitants was 1.24 cases. Regarding the clinical outcome, 343 (61.2%) had a cure, 215 (38.4%) died and two (0.3%) are still hospitalized up now. The lethality rate was 38.4%. The median age was 44 years (1–90); 455 (81.2%) cases were men and 78.4% of cases were not vaccinated. Twelve cases underwent liver transplantation, nine of which died (case fatality rate 75%). The calculated median of the results for laboratory tests at the time of notification to sanitary authorities were 2395 U/L for aspartate aminotransferase; 1906 U/L for alanine aminotransferase; 2.4 mg/dL for total bilirubin and 2.05 mg/dL for direct bilirubin.

Conclusion: The follow-up and monitoring of the notified cases of yellow fever are necessary to decide on the measures of prevention in public health and to evaluate their effectiveness. Reinforce a mass vaccination for yellow fever, with a greater coverage, need to be achieved in order to avoid new cases during the next period of seasonality of the disease in the State of São Paulo, Brazil.

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Protection against canine vector-borne diseases using a monthly prevention of dinotefuran-permethrin-pyriproxyfen and milbemycin oxime

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Purpose: Corsica, is a French island in the Mediterranean Sea between the European and the African continents. The ecological conditions of the site offer suitable environments for the canine vector-borne diseases (CVBD); which need to be further investigated to better implement targeted and cost-effective control programs. The objective of the study was the assessment of the

preventive efficiency of a new prophylactic protocol against three major CVBD occurring in eastern coast of Corsica: monocytic ehrlichiosis, dirofilariosis and leishmaniasis.

Methods & Materials: A total of 80 dogs split into two groups, were enrolled into a cohort surveyed during one year. The first group consisted of 25 military working dogs from the Solaro area, which received monthly prophylactic treatment: *per os* administration of 1.5 tablet of milbemycin oxime-praziquantel (Milbactor®, Ceva, France), and a topical line-on application of a 3.6 mL solution of dinotefuran-permethrin-pyriproxyfen (Vectra® 3D, Ceva, France). The second group consisted of 55 dogs from regions of Solaro and Aleria under various other preventive protocols. The efficiency of the treatment was assessed at Day 0, 6 and 12 months' post-treatment. The *Dirofilaria* spp. infection was investigated using two customized designed PCR methods: a pan-filarial real time qPCR targeting the 28S gene and a standard sequencing analysis of the 18S rRNA gene. Indirect immunofluorescence assay was used to diagnose leishmaniasis and ehrlichiosis.

Results: By the end of the investigation, no new cases of CVBD were recorded within the first group; while five new cases of CVBD were recorded (9%, n = 55) including three canine filariosis (two with *Dirofilaria immitis* and one with *D. repens*), and two serological cases of ehrlichiosis. Noteworthy, no new cases of leishmaniasis were detected in both groups.

Conclusion: The preliminary data obtained during this investigation showed that monthly prevention using Vectra® 3D and Milbactor® protect dogs against the most common CVBD circulating in the Mediterranean basin. In the meantime, the other protocols failed to protect at least 9% of the dogs in the same endemic area.

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Epidemiology of skin infection in homeless population in Marseille

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Purpose: To describe homeless demographics, chronic medical conditions, ectoparasite and vector-borne disease prevalence over a 19 year-period of time.

Methods & Materials: Single-day cross sectional surveys were performed from 2000–2018 using standardized questionnaires and clinical examination of 2387 participants. Samples were collected including:

Body lice (2000–2018): Detection of *Bartonella quintana*, *Rickettsia* spp., *Borrelia* spp., *Acinetobacter* spp., *Acinetobacter baumannii* (qPCR)

Human skin (2014) from hair, neck, arm pits, pelvic belt: *Acinetobacter* spp., *Acinetobacter baumannii*.

Blood (2014): *Acinetobacter* spp. (qPCR, culture)

Detection of *Sarcoptes scabiei* (2018): physical examination, dermatoscopy, qPCR (skin scrapings)

Results: The population was characterized by a majority of males (95.6%) from North African (49.0%) with a relatively high prevalence of chronic homelessness (44.0%). Pruritus (26.5%) and scratch lesions (17.4%) were recorded. The prevalence of body lice (10.2%) significantly decreased overtime (14.4% in **2000**; 1% in **2018**). Positive associations were reported between body lice infestations and older age, duration of stays in France for migrants, frequent consumption of alcohol, and tobacco smoking during the **2000–2017** time period. During **2013–2018**, we observed *Bartonella*