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BOLLETTINO BIBLIOGRAFICO

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Torres-Castro M., Sánchez-Montes S., Panti-May J.A., Miranda-Caballero C.I., Matu-Góngora R., Yeh-Gorocica A., Tello-Martín R., Carrillo-Chan C.F., Suárez-Galaz A.

No evidence of DNA of pathogenic *Leptospira* in roadkill wildlife from the Yucatan Peninsula, Neotropics of Mexico

(2026) Revista de Investigaciones Veterinarias del Peru, 37 (1), art. no. e30736, pp. 1 - 15
DOI: 10.15381/rivep.v37i1.30736

ABSTRACT: Leptospirosis in wildlife has not been fully described; however, there are countless records of pathogenic Leptospira species in these animals, mainly rodents and bats, which are natural reservoirs and hosts, respectively, in the transmission cycle. Roadkilled wildlife is used in biomedical research and epidemiological surveillance to determine the potential host status of etiological agents important for public and animal health without further impacting their populations. The aim of the study was to evaluate the presence of pathogenic Leptospira genetic material in roadkilled wildlife from the Yucatan Peninsula (YP). Carcasses were collected on different roads in YP. Necropsy was performed, and kidney or lung fragments were taken to be used in the extraction of genomic DNA. Two endpoint polymerase chain reactions targeted the SecY and Lipl32 genes to identify pathogenic Leptospira. Thirty-two specimens belonging to 12 species (Sciurus yucatanensis, Nasua narica, Procyon lotor, Urocyon cinereoargenteus, Dasypus novemcinctus, Didelphis virginiana, Galictis vittata, Leopardus pardalis, Spilogale yucatanensis, Tamandua mexicana, Philander opossum and Potos flavus) were evaluated. No evidence of pathogenic Leptospira was found in the organs studied (0%, 0/32). This work evaluated the greatest diversity of wild animals in the neotropics of Mexico to identify them as hosts of pathogenic Leptospira. The results suggest that these bacteria have a very low prevalence in these animals; however, serological tests are necessary to determine the prevalence of seroexposure to pathogenic Leptospira in wildlife YP.

LANGUAGE OF ORIGINAL DOCUMENT: English

Fernandes L.G.V., Nally J.E.

CRISPR-based mutagenesis of lipopolysaccharide biosynthesis genes in *Leptospira interrogans* reveals gene essentiality and confirms the role of an O-antigen polymerase

(2026) Scientific Reports, 16 (1), art. no. 13419
DOI: 10.1038/s41598-026-43869-y

ABSTRACT: Leptospirosis is a worldwide zoonosis caused by pathogenic bacteria of the genus Leptospira. Lipopolysaccharide (LPS) is an immunodominant and protective antigen for Leptospira, but its biosynthesis remains poorly understood. In this study, we employed CRISPR/Cas9-non-homologous end-joining and CRISPR-Prime Editing to mutate key genes within the rfb locus of L. interrogans, including those involved in core oligosaccharide assembly, and the biogenesis, polymerization, and ligation of O-antigen. Mutants were successfully generated in LIC11312 (waaF, heptosyltransferase II) and LIC12137 (wcaJ, undecaprenyl-phosphate glycosyltransferase) but yielded only in-frame deletions suggesting their essentiality. Mutants were also successfully generated in LIC12143, a putative O-antigen polymerase, which exhibited truncated LPS that failed to induce acute leptospirosis in hamsters but retained the ability to colonize kidneys. Mutation of LIC_RS09320, an O-antigen ligase, did not display a change in LPS phenotype. Bacterins prepared with either control wild-type or LIC12143 mutant cells conferred complete homologous protection with sterile immunity, though failed to protect against heterologous challenge. These findings confirm LIC12143 as a functional O-

antigen polymerase and underscore the challenges in generating knockout mutants to understand LPS biosynthesis in leptospires.
LANGUAGE OF ORIGINAL DOCUMENT: English

Elayaperumal I., John Keeppallil K.T., Jose N., Matcha J.
Leptospirosis-associated acute kidney injury: still a major burden in tropical countries?
(2025) Turkish Journal of Nephrology, 34 (4), pp. 281 - 288
DOI: 10.5152/turkjnephrol.2025.251024
ABSTRACT: Background: Leptospirosis is a common condition that affects people from the tropics. This disease is known to cause severe morbidity and mortality. Acute kidney injury (AKI) is commonly observed in leptospirosis patients. It was previously thought to occur only in severe forms of the disease, also known as Weil's disease. The current study was conducted to evaluate kidney involvement in leptospirosis in the era of early diagnosis and widespread antibiotic use. Methods: A retrospective study was conducted over a period of 5 years, including all patients with a proven diagnosis of leptospirosis. The clinical characteristics and kidney involvement were noted in detail. Analysis was done to evaluate the frequency of complications and recovery characteristics of the patients with this disease. Results: Acute kidney injury was common with leptospirosis and was present in 26.7% of patients; however, hypokalemia and other electrolyte abnormalities were seen only in 17.05% of the total patient population. There appears to be significant progression to chronic kidney disease (CKD) in patients with leptospirosis with 80% of patients who require dialysis during the AKI episode going on to varying stages of kidney failure in the future and 33.3% of patients requiring continuing KRT. Patients with AKI had an increased mortality compared to patients without AKI in leptospirosis. Conclusion: Leptospirosis continues to be a significant contributor to mortality and morbidity even today. Abnormal electrolytes previously believed to be common in this disease, need not always be present. In view of a high rate of AKI to CKD transition, screening of all patients with AKI and leptospirosis may be recommended.
LANGUAGE OF ORIGINAL DOCUMENT: English

Nisansala T., Bandara K., Gunasekara C., Weerasekera M., Ranasinghe N., Marasinghe C., Gamage C., Fernando N.
Clinical presentation and laboratory findings: key indicators for early diagnosis and severity prediction of leptospirosis in Sri Lanka
(2026) BMC Infectious Diseases, 26 (1), art. no. 814
DOI: 10.1186/s12879-026-13042-x
ABSTRACT: Background: The diagnosis and treatment of leptospirosis in high-burden, low-resource settings pose a challenge due to the limited availability of confirmatory diagnostics. Therefore, the initiation of treatment relies primarily on the clinical assessment of patients suspected of having leptospirosis in resource-poor settings. This study aimed to both early diagnostic indicators and predictors of disease severity. Methods: A total of 170 patients suspected of having leptospirosis admitted to selected hospitals in Western Province, Sri Lanka were enrolled. MAT, qPCR, and culture were used for confirmatory diagnosis. Patients with confirmed leptospirosis were grouped as severe and non severe based on presenting with at least one organ failure and/or dysfunction. Results: Out of 170 leptospirosis suspected patients, 79 (46.47%) were confirmed by PCR (n = 49), MAT (n = 44) and/or culture (n = 2). Myalgia, oliguria, elevated neutrophils, serum creatinine, serum urea, SGOT, SGPT and CRP, decreased lymphocytes, haemoglobin and platelets had a significant association

with confirmed leptospirosis. Of patients with confirmed leptospirosis, 51 were categorized as non severe and 28 were categorized as severe. Leptospirosis severity was correlated with decreased haemoglobin, lymphocyte and platelet counts, and elevated WBC, neutrophil, K+, SGOT, SGPT, serum urea, serum creatinine, total and direct bilirubin and CRP. A bacterial load between 1.21 × 102 to 1.26 × 106 (median 3,326) Leptospira/ml was reported with no significant association between severity of the disease and leptospiraemia. Conclusion: Clinical and basic laboratory findings play a crucial role in supporting the diagnosis of leptospirosis and predicting disease severity, particularly in tropical, resource-poor settings.
LANGUAGE OF ORIGINAL DOCUMENT: English

Kokkaew E., Koedsin W., Yomsatiankul J., Yomsatieankul W., Jitpeera C., Sakchainanon W.
Environmental drivers and machine learning forecasting of leptospirosis: a multi-province study in Thailand
(2026) International Journal of Environmental Health Research
DOI: 10.1080/09603123.2026.2658192
ABSTRACT: Leptospirosis is a major environmental health concern in Thailand, where transmission is strongly influenced by hydrometeorological conditions such as rainfall, surface water, and temperature. This study developed machine-learning models for one-month-ahead leptospirosis forecasting using lagged environmental predictors across five endemic provinces from 2017 to 2023. Monthly case data from the Department of Disease Control were integrated with meteorological variables from the Thai Meteorological Department and Sentinel-2–derived NDVI and MNDWI. Spearman correlation analysis revealed delayed environmental effects, with optimal lags of 2–3 months for MNDWI (ρ = 0.48), rainfall (ρ = 0.41), and temperature (ρ = 0.36), while humidity showed a shorter one-month lag (ρ = 0.43). Among XGBoost, Gradient Boosting (GBT), and Random Forest, GBT achieved the best performance (MAE = 6.83, R2 = 0.617). Feature-importance analysis indicated that recent incidence history dominated predictions (2-month rolling mean = 55.6%), with rainfall at 3-month lag (5.1%) and current rainfall (4.5%) being the strongest environmental predictors. Forecast skill varied across provinces, with highest accuracy in Si Sa Ket (R2 = 0.681) and weakest in Songkhla (R2 = 0.056), highlighting spatial heterogeneity in environmental and socio-behavioral transmission drivers. These findings highlight the utility of environmental monitoring for early-warning systems and demonstrate the feasibility of climate-informed forecasting for leptospirosis in tropical endemic settings.
LANGUAGE OF ORIGINAL DOCUMENT: English

Loria J., Baldwin C., Lilenbaum W.
From classical bacterins to recombinant vaccines: critical aspects of the immune response in ruminants
(2026) Microorganisms, 14 (4), art. no. 790
DOI: 10.3390/microorganisms14040790
ABSTRACT: Leptospirosis is a neglected zoonosis causing significant economic losses in livestock, primarily through Bovine Genital Leptospirosis (BGL). While current vaccines prevent clinical disease, they typically fail to provide sterilizing immunity against adapted strains. This allows Leptospira to persist in the genitourinary tract, maintaining environmental shedding and zoonotic risk. Achieving sterilizing immunity remains a challenge, and this gap may be closely related to the immune response pattern of ruminants, where effective protection against chronic colonization requires, besides the humoral response, a robust cellular immune response (Th1/IgG2). Recent studies indicate that adjuvants based on oil emulsions or biodegradable polymers are better at inducing Th1/IgG2 responses and the proliferation of CD4+ T cells, as well as WC1+

γδ T cells, which may be essential for eliminating Leptospira from renal and probably also genital tissues. Thus, overcoming chronic colonization through inducing the Th1-type immune response may be the main challenge for vaccination to fulfill its role in sustaining herd immunity and mitigation of zoonotic risk, in line with the One Health approach. In this context, we aimed to critically examine immune mechanisms in ruminants, advances in vaccine platforms and adjuvant strategies against bovine leptospirosis and outline the challenges that must be overcome to achieve sterilizing immunity.
LANGUAGE OF ORIGINAL DOCUMENT: English

Lee N., Tanaka T., Koizumi N., Coughlan C., Sayo A.R., Ariyoshi K., Edwards T., Smith C., Bailey R.
Leptospirosis: clinical review and updates on therapeutics
(2026) The Lancet Infectious Diseases
DOI: 10.1016/S1473-3099(26)00060-5
ABSTRACT: Leptospirosis is a globally distributed zoonotic bacterial disease caused by Leptospira spp. Mortality and morbidity burdens are greatest in low-to-middle-income tropical countries, where frequent natural disasters and poor infrastructure drive outbreaks that disproportionately affect marginalised communities. Leptospirosis is a common but overlooked cause of acute undifferentiated fever. This neglect is augmented by limited diagnostics, insufficient treatment evidence, and the absence of a coordinated global health policy. Diagnosis requires clinical vigilance and timely testing, although access to and accuracy of available diagnostics is limited. Antimicrobial therapy recommendations are conditional based on clinical context. Monitoring for organ-specific complications and early organ supportive care is essential. Supporting evidence for current treatment practices remains weak, undermined by methodological inconsistency and low funding. This state-of-the-art Review of leptospirosis clinical management is aimed at clinicians in general medicine, infectious diseases, and public health. Existing treatment evidence gaps are comprehensively summarised to inform future research and therapeutic strategies.
LANGUAGE OF ORIGINAL DOCUMENT: English

Tantiworrawit P., Thammawijaya P.
A design thinking approach to developing an innovative board game for preventing leptospirosis among schoolchildren in Nan Province, Thailand
(2025) Outbreak, Surveillance, Investigation and Response (OSIR) Journal, 18 (4), pp. 232 - 240
DOI: 10.59096/osir.v18i4.278794
ABSTRACT: Leptospirosis is a major public health concern in Thailand. In 2024, Nan Province reported an increasing incidence of leptospirosis cases, with schoolchildren accounting for the majority, including one fatality. Entertainment-education is an effective public health communication strategy for school-aged populations, improving both understanding and engagement. This study applied a design-thinking approach to develop an innovative game-based intervention and assess its effectiveness in enhancing awareness, knowledge, and preventive practices related to leptospirosis among schoolchildren. The study employed a mixed-methods research and development design, conducted between January and September 2025. Qualitative methods were used to identify schoolchildren’s needs and contexts, which informed the development of the Lepto Game, an interactive simulation board game. A quantitative one-group pre-post design was used to evaluate the intervention’s effectiveness. Three main issues were identified: (1) limited communication between schoolchildren and healthcare providers about the disease and its symptoms, (2) low

general awareness of leptospirosis, and (3) the need for more engaging and enjoyable health education tools. Among 132 schoolchildren who tested the intervention, satisfaction with learning was very high. In the quantitative study (n=124, 68.5% male, age 12–15 years), significant improvements were observed in mean scores for knowledge of exposure risks (0.395), symptoms (0.387), and self-care practices (0.556). Integrating design thinking with entertainment-education can create engaging interventions that effectively enhance awareness, knowledge, and preventive practices among schoolchildren.
LANGUAGE OF ORIGINAL DOCUMENT: English

Rathinam S.R., Vedhanayagi R., Thundikandy R.T., Sundar B., Kohila J.
Leptospiral uveitis: a late complication of systemic leptospirosis
(2026) Indian Journal of Medical Research, 163 (4), pp. 541 - 547
DOI: 10.25259/IJMR_2808_2025
ABSTRACT: Background and objectives: Leptospirosis is an important animal borne disease that primarily affects farmers in tropical countries. As a late complication, it causes ocular inflammation, uveitis. We are presenting ocular signs of leptospiral uveitis. Methods: In this retrospective observational study, we have reviewed the data from clinical and laboratory records of microscopic agglutination test (MAT) positive, uveitis patients seen between 1994 and 2017 at the uveitis department of a university affiliated ophthalmology postgraduate institute in Tamil Nadu, South India. Results: Out of a total of 75,150 new uveitis cases with different aetiologies seen in 24 years, 3,658 (4.9%) had clinical diagnosis of leptospiral uveitis. Of them, 1,268 (34.7%) patients were positive for leptospiral serological test. Of them, follow-up details were available for 876 patients. Of 876, 650 (74.2%) were men, 482 (55%) were farmers. 1224 eyes of 876 patients were found to have uveitis. The most common ocular signs were vitreous membranous opacities seen in 814 eyes (66.5%) followed by retinal phlebitis in 347 (28.4%), optic disc hyperaemia in 260 eyes (21.2%), and hypopyon in 208 eyes (17%). Active choroiditis/retinitis were never seen. Topical, oral or periocular steroid injections were used to treat uveitis. Inflammatory control was achieved in 96% of the patients. Two or more-line visual improvement was seen in 700 out of 740 (94.5%) eyes. Interpretation and conclusions: Ocular involvement is an important immunological complication of systemic leptospirosis. Recognition of this entity is vital, especially in young males in whom other immunological uveitis are also common.
LANGUAGE OF ORIGINAL DOCUMENT: English

Sudhakar Rao M., Samanth J., Nayak V., Padmakumar R., Nayak A.G., Sanjana Nambiar P.K., Rao S.R., Rao P.
Cardiovascular manifestations and outcomes in patients with leptospirosis admitted to a tertiary care center in the Coastal Karnataka region in India
(2026) Infection
DOI: 10.1007/s15010-026-02806-x
ABSTRACT: Introduction: Leptospirosis is a globally prevalent zoonotic infection caused by Leptospira species. Cardiac involvement is increasingly recognized, yet large-scale studies comprehensively evaluating electrocardiographic and echocardiographic manifestations, including myocarditis, remain limited. Methods: This retrospective study included adult patients with clinically suspected leptospirosis and positive IgM ELISA admitted to a tertiary care hospital in South India between January 2016 and September 2020. Clinical features, electrocardiographic (ECG) findings, two-dimensional echocardiographic parameters, and in-hospital outcomes were analyzed. Binomial logistic regression was performed to identify independent predictors of all-

cause mortality and myocarditis. Results: A total of 510 patients were analyzed (mean age 48.4 ± 13.7 years; 66.5% male). The mean hospital stay was 10.1 ± 6.1 days, with 40% requiring hospitalization beyond 10 days. Diabetes mellitus and hypertension were present in 16.7% and 16.9% of patients, respectively. Acute respiratory distress syndrome occurred in 10.6%, and 28% developed multiorgan dysfunction syndrome; 17.8% required hemodialysis. The most common ECG abnormalities were corrected QT interval prolongation (21.0%) and sinus tachycardia (20.8%). Echocardiographic evidence of myocarditis was observed in 10.4% of patients, including isolated left ventricular dysfunction (4.1%), isolated right ventricular dysfunction (3.9%), and biventricular dysfunction (2.4%). The overall in-hospital mortality rate was 8%. Increasing age, sinus tachycardia, QTc prolongation, hypertension, hemodialysis requirement, and myocarditis were independent predictors of mortality. Conclusions: Myocarditis represents a significant cardiac complication in leptospirosis and is associated with increased mortality. Routine cardiac evaluation may facilitate early detection and risk stratification. Clinical trial registration: Not applicable, as this study was retrospective in nature.
LANGUAGE OF ORIGINAL DOCUMENT: English

Chatterjee D., Chandra A., Khandakar M.A., Sana B.

Leptospira-associated haemolytic uraemic syndrome: a diagnostic challenge

(2026) BMJ Case Reports , 19 (5)

DOI: 10.1136/bcr-2025-271203

ABSTRACT: Leptospirosis is a globally prevalent zoonotic infection caused by pathogenic spirochaetes of the genus Leptospira. Although typically associated with mild flu-like symptoms or Weil’s disease (characterised by jaundice, renal failure and haemorrhagic manifestations), atypical and severe presentations can mimic other systemic disorders. A man in his 40s presented with fever, myalgia along with rapidly progressive jaundice, thrombocytopenia, microangiopathic haemolytic anaemia and acute kidney injury, preceded by a short episode of diarrhoea. The initial working diagnosis was haemolytic uraemic syndrome (HUS) secondary to Shiga toxin-producing Escherichia coli and he was treated with plasma exchange, transfusions and renal replacement therapy. However, stool examinations were negative for Shiga toxin and bacterial pathogens. Subsequent investigations confirmed leptospirosis. He improved significantly after treatment with doxycycline alongside supportive therapy. This case highlights the importance of considering leptospirosis as a differential diagnosis in patients with HUS, particularly in endemic regions, to avoid delays in targeted treatment.
LANGUAGE OF ORIGINAL DOCUMENT: English

Maze M.J., Mgode G.F., Kilonzo K., Crump J.A.

Leptospirosis

(2025) Principles of Medicine in Africa, pp. 383 - 384

DOI: 10.1017/9781009052733.031

ABSTRACT: Leptospirosis is a common zoonosis that is under-recognized in many parts of sub-Saharan Africa (Costa et al. 2015). Climate change, changing agricultural practices and rapid urbanization suggest that leptospirosis will continue to be a major cause of illness in coming years.
LANGUAGE OF ORIGINAL DOCUMENT: English

Kanayama A., Ejiri H., Chiko Y., Namihira I., Yonaha T., Kuba K., Yoshimi M., Koizumi N., Takeshima S., Kaku K.

Environmental distribution of pathogenic *Leptospira spp*. in subtropical rivers of Japan and implications for human infection

(2026) Tropical Medicine and International Health

DOI: 10.1111/tmi.70157

ABSTRACT: Objectives: Leptospirosis is a zoonotic disease caused by Leptospira spp. often linked to freshwater exposure in subtropical and tropical regions. Okinawa Prefecture reports the highest number of leptospirosis cases in Japan based on national surveillance data. Although recreational river activities in Okinawa are a major opportunity for exposure, direct evidence connecting environmental contamination with human infection remains limited. We investigated the spatiotemporal distribution of pathogenic Leptospira spp. in rivers on Iriomote Island, Okinawa, a subtropical region with a high leptospirosis incidence. Methods: Ten laboratory-confirmed patients treated at the regional hospital and affiliated clinics in 2024 were assessed for demographics, onset dates and exposure histories. Water samples were collected monthly from seven major rivers (June–September and December 2024). Pathogenic Leptospira spp. were detected by nested polymerase chain reaction targeting flaB, followed by sequencing and phylogenetic analysis. Results: A cluster of six cases occurred with onset on August 26–27; all reported river activities during incubation periods. In the environmental survey, highly and intermediately pathogenic genotypes were identified in all rivers (n = 84 water samples). Leptospira interrogans was frequently identified, particularly during summer. Novel sequences within the highly pathogenic group suggest potentially unreported species. Pathogenic Leptospira were detected in river water both before and after rainfall. The case cluster occurred following heavy rainfall, suggesting a possible temporal association between rainfall and increased exposure risk. Conclusion: Pathogenic Leptospira spp., including clinically relevant L. interrogans, were widely detected in rivers on Iriomote Island. Human case occurrence followed heavy rainfall where pathogenic Leptospira were already present in the environment. While this temporal pattern suggests that rainfall may have exacerbated exposure risk, exposures unrelated to rainfall cannot be excluded. This integrated approach may improve case detection and risk assessment in endemic settings and is adaptable to other tropical and subtropical regions with similar exposure risks.

LANGUAGE OF ORIGINAL DOCUMENT: English

Lennard K.E., Torres R.J., Klingstrom M.G., Knobel B., Andresen D., Westman M.E., Ferson M.J.

Ratting out leptospirosis: investigation of a revealing urban case associated with socioeconomic disadvantage in Sydney, Australia

(2026) Communicable diseases intelligence (2018), 50

DOI: 10.33321/cdi.2026.50.029

ABSTRACT: Classically reported in Australia in association with travel or occupational exposures, leptospirosis in the urban setting is a disease of lower socioeconomic status with the risk of rat exposure inversely proportional to conditions of living. Whilst this has been widely reported elsewhere in the world, urban-acquired cases of leptospirosis are rare in Australia. Here we report on the fifth locally acquired case in Sydney, Australia, during the period 2003-2024. This case coincided with a severe rat infestation in the case's social housing block. A collaborative environmental health investigation followed, involving members of the Public Health Unit and Department of Primary Industries and Regional Development. Twelve rats captured within a 1.5 km radius of the case's residence underwent polymerase chain reaction testing for leptospirosis and were

all negative. This prompted consideration of other potential reservoirs, including native species. This case demonstrates persisting social inequities in metropolitan Sydney, and the consequences for health.
LANGUAGE OF ORIGINAL DOCUMENT: English

Zhang T., Zhou X., Liu Q., Chen Y., Liu J.

Diagnosis of leptospirosis by metagenomic next generation sequencing of bronchoalveolar lavage fluid: a case report and literature review

(2026) Chinese Journal of Infection and Chemotherapy, 26 (2), pp. 150 - 154
DOI: 10.16718/j.1009-7708.2026.02.007

ABSTRACT: Objective To diagnose leptospirosis by metagenomic next generation sequencing (mNGS) of bronchoalveolar lavage fluid (BALF). Methods A retrospective analysis was performed on the clinical manifestations, laboratory findings, treatment, and outcome of one patient diagnosed with leptospirosis by mNGS of BALF. Relevant cases were identified by searching CNKI, VIP, Wanfang, Chinese Medical Association Journal Database and PubMed databases using the keywords “leptospirosis” and “metagenomic next-generation sequencing”. The clinical characteristics of leptospirosis and diagnosis and treatment methods were reviewed. Results The patient was admitted with complaints of “intermittent fever for more than one week and elevated serum creatinine for two days.” After admission, Leptospira was detected from BALF by mNGS. The patient was treated with penicillin-based antibiotic therapy for one week. The patient was discharged after improvement. Literature review showed that most patients presented with nonspecific symptoms such as fever, cough, sputum production, and fatigue. In some cases, mNGS of BALF detects potential pathogen in addition to Leptospira, making it necessary to clarify whether these are merely colonizing organisms or true mixed infections. Penicillin remained the primary antibiotic treatment. Conclusions The onset of leptospirosis is commonly characterized by fever and respiratory symptoms. However, its non-specific clinical presentation makes diagnosis and treatment relatively difficult. Molecular detection techniques can be used to identify the pathogen early, thereby improving patient prognosis.
LANGUAGE OF ORIGINAL DOCUMENT: Chinese

Zeng Q., Xie L., Dai W., Xu F., Dai Y.

Extracorporeal membrane oxygenation haemoperfusion for leptospirosis pulmonary hemorrhagic disease: report of 1 case

(2026) Respirology Case Reports, 14 (5), art. no. e70565
DOI: 10.1002/rcr2.70565

ABSTRACT: Severe pulmonary leptospirosis (SPFL), characterized by diffuse alveolar haemorrhage (DAH) and acute respiratory distress syndrome (ARDS), carries a high mortality, often due to diagnostic delays and complex management. We report a case of a 42-year-old male with outdoor occupational exposure who presented with fever and hemoptysis, rapidly progressing to severe respiratory failure and thrombocytopenia. Chest imaging confirmed DAH/ARDS. For refractory hypoxemia, veno-venous extracorporeal membrane oxygenation (VV-ECMO) was initiated without systemic anticoagulation due to active pulmonary haemorrhage. Metagenomic next-generation sequencing (mNGS) of bronchoalveolar lavage fluid rapidly identified Leptospira interrogans, enabling targeted antimicrobial therapy alongside multidisciplinary support. The patient gradually improved, was successfully weaned from ECMO and ventilator support, and was discharged without residual organ dysfunction. This case demonstrates that early application of anticoagulation-free VV-ECMO combined

with mNGS-based rapid diagnosis and multidisciplinary care can improve outcomes in SPFL, highlighting the importance of considering this diagnosis in febrile patients with DAH and environmental exposure.
LANGUAGE OF ORIGINAL DOCUMENT: English

Kędzierska-Mieszkowska S.

The N-terminal domain of LIC12756 is the key determinant of this protein's anti-sigma activity toward LIC12757 in pathogenic *Leptospira interrogans*

(2026) Pathogens, 15 (4), art. no. 379

DOI: 10.3390/pathogens15040379

ABSTRACT: Extracytoplasmic function (ECF) σ factors are central regulators of bacterial adaptation to environmental changes. The genome of Leptospira interrogans encodes 11 such factors, including LIC12757. Previous studies have shown that LIC12757 is regulated by the FecR-like protein LIC12756, forming a regulatory system similar to the Escherichia coli FecI-FecR system. Here, the domain-specific regulatory role of LIC12756 was investigated. Interactions between LIC12757 and several LIC12756 variants, including the N-terminal domain (NTD) alone, NTD with half or full transmembrane domain (NTD-TMD), and full-length LIC12756 (FL, control), were analyzed using the BACTH system. During logarithmic growth, interactions were detected only with FL and NTD-TMD, whereas in the stationary phase, all variants interacted with varying strengths. Pull-down assays using His6-tagged NTD confirmed its direct binding to LIC12757. Promoter activity analysis revealed that the NTD alone functions as an anti-σ factor in the logarithmic stage of growth. However, it is insufficient for full activation of LIC12757-dependent transcription during the stationary phase, as observed with FL protein. The NTD-TMD variant caused only minor stimulation compared to FL. These results indicate that NTD is a key determinant of LIC12756's anti-σ activity toward LIC12757, whereas full activation of LIC12757 requires additional extrinsic signals, which are likely sensed by the C-terminal extracytoplasmic region (ECR). These findings provide mechanistic insight into ECF σ factor regulation in L. interrogans.
LANGUAGE OF ORIGINAL DOCUMENT: English

Herbreteau V., Picardeau M.

Climate change and leptospirosis: a growing environmental and zoonotic threat

(2026) MicroLife, 7

DOI: 10.1093/femsml/uqag015

ABSTRACT: Climate change is increasingly recognized as a key driver in the emergence and re-emergence of infectious diseases, including leptospirosis, a globally distributed bacterial zoonosis. The bacterial agents of leptospirosis infect humans through contact with soil or water contaminated by the urine of animal reservoirs. As a primarily waterborne disease, leptospirosis is strongly influenced by climatic conditions, including rainfall, flooding, and extreme events such as hurricanes and cyclones. Here, we present current knowledge on the links between climate change and leptospirosis, as well as perspectives on effective strategies to combat this disease, which disproportionately affects the poorest populations.
LANGUAGE OF ORIGINAL DOCUMENT: English

Shenurkar A.S., Karpe S.P., Nair J.P.

Study of outcome of acute respiratory distress syndrome in intensive respiratory care unit: a single-center study at a tertiary care hospital

(2026) Journal of Association of Physicians of India, 74 (5), pp. e16 - e21
DOI: 10.59556/japi.74.1489
ABSTRACT: Background: Acute respiratory distress syndrome (ARDS) is a severe lung injury characterized by diffuse inflammation and hypoxemia. Despite advances in critical care, ARDS remains a significant cause of morbidity and mortality. This study evaluates the clinical profile, etiology, and outcomes of ARDS patients undergoing invasive ventilation (IV) and noninvasive ventilation (NIV) in a tertiary care setting. Materials and methods: This observational study was conducted in the Department of Respiratory Medicine at a tertiary care hospital over 18 months (January 2023 to June 2024). Patients meeting the Berlin definition of ARDS and aged >12 years were included. Data collection encompassed demographics, clinical presentation, laboratory investigations, imaging, and ventilatory support. Statistical analysis included descriptive, comparative, and survival analyses using SPSS v21. Results: The study included 100 patients, with a male predominance (75%). The mean age was 35.67 ± 14.88 years. The most common symptoms were fever (97%) and breathlessness (96%). Infectious etiology was identified in 66%, with leptospirosis (41%) being most prevalent. A total of 94% received NIV, and 47% required transition to IV. Mortality was significantly associated with invasive ventilation ($p < 0.001$). Kaplan–Meier analysis demonstrated significantly better survival in nonintubated patients ($p < 0.001$). Conclusion: ARDS remains a critical illness with high mortality, particularly in IV patients. Identifying risk factors and optimizing noninvasive management may improve outcomes. Further studies are warranted to explore regional variations in etiology and management strategies.
LANGUAGE OF ORIGINAL DOCUMENT: English

Chalesh A., Khaki P., Moradi Bidhendi S., Tebianian M., Taghizadeh Tarnabi M.
Expression and purification of LigA antigen, a surface lipoprotein in the pathogenic *Leptospira interrogans*
(2026) Archives of Razi Institute, 81 (1), pp. 99 - 110
DOI: 10.32598/ARI.81.1.3450
ABSTRACT: Introduction: Although considerable progress has been made in leptospiral vaccine development, their use is limited because of short-term and serovar-specific immunity. Thus far, many approaches have been used to identify heterologous and costeffective antigen(s) against leptospirosis. Recent advances have identified leptospiral immunoglobulin-like (Lig) proteins as promising candidates for vaccine development. Materials & Methods: Hence, in this study, the recombinant LigA subunit consists of the ligA9, ligA10, ligA11, and ligA12 domains, were selected as conserved regions of the LigA protein. Immunoinformatics approaches, including I-TASSER, ProSA, DiscoTope v2.0, and Molprobity were utilized to check the conformational accuracy. Furthermore, 10 of the most efficient peptides for MHC-I and II grooves were predicted by the ElliPro, NetMHCpan 4.1 EL and NetMHCIIpan 4.1 EL servers. Results: The Ramachandran plot showed acceptable conformations of the selected recombinant protein amino acid residues. The results showed that selected epitopes elicit both humoral-and cell-mediated immune responses. Hence, the selected epitopes were constructed in the pET41a+ plasmid and synthesized by General Biosystems. Recombinant plasmids were transferred to Escherichia coli Top10-DH5α and BL21 StarTM (DE3) competent cells for cloning and expression, respectively. Plasmid transformation and purification were confirmed using polymerase chain reaction (PCR) and enzymatic digestion. Recombinant LigA (r-LigA) was expressed in the presence of 0.5 M IPTG at 30˚C for 16 hours. The sodium dodecyl-sulfate polyacrylamide gel electrophoresis (SDS-PAGE) result revealed the production of 38-kDa protein, which accumulated mostly in inclusion bodies and was purified using the urea method and dialysis. Dot blotting of the r-LigA protein confirmed a high degree of accuracy of

immunogenicity. Conclusion: The present study revealed that r-LigA is a promising candidate for developing diagnostic and subunit leptospirosis vaccines.
LANGUAGE OF ORIGINAL DOCUMENT: English

Cano Muñoz L.J., Morales Jackson A., Serrano Mujica L.K., Acero Plazas V.M.
Public health impact of leptospirosis and brucellosis
(2026) Revista Veterinaria, 37, pp. 1 - 15
DOI: 10.30972/vet.3719220
ABSTRACT: Zoonoses such as brucellosis and leptospirosis are diseases naturally transmitted and shared between vertebrate animals and humans, with worldwide distribution. Similarly, there is currently no clear pathway for the comprehensive management of leptospirosis and brucellosis in dogs. The general objective of this study was to describe the public health impact of brucellosis and leptospirosis. A systematic literature review was conducted, selecting original scientific articles published in peer-reviewed journals from 2018 to 2023. The databases consulted included Scielo, PubMed, Google Scholar, and the Virtual Health Library (BVS). Additionally, information was gathered from governmental and non-governmental institutions involved in the surveillance of brucellosis and leptospirosis. For leptospirosis, rodents are the main reservoir, with untreated water being the most likely source of contamination. For brucellosis, stray dogs represent a risk factor, as they function as reservoirs and sources of infection. The incubation period of both diseases is highly variable, ranging from days to several months. In both cases, animals may remain asymptomatic carriers and, even under treatment, can excrete the pathogen into the environment. The public health impact of brucellosis and leptospirosis and the role of dogs in both diseases were described.
LANGUAGE OF ORIGINAL DOCUMENT: English

Merhi H., Mollaei C., Damen B., Mawla Z., Raad A.
Leptospirosis on the edge: a case report of critical multi-organ involvement
(2026) BMC Infectious Diseases, 26 (1), art. no. 889
DOI: 10.1186/s12879-026-12856-z
ABSTRACT: Leptospirosis is a bacterial zoonotic disease caused by Leptospira species, commonly transmitted through direct or indirect contact with contaminated water, soil, or animal urine. Although typically a self-limiting illness, severe forms of leptospirosis (Weil’s disease) can lead to multi-organ dysfunction, including hepatic and renal failure, hemorrhagic manifestations, and altered mental status. This case report describes a 52-year-old male who presented with severe jaundice, nausea, vomiting, diarrhea, and multi-organ dysfunction, including acute kidney injury, liver failure, and thrombocytopenia, following a recent history of fever and self-medication. Initial investigations revealed elevated inflammatory markers, liver enzymes, renal dysfunction, and thrombocytopenia, raising suspicion for leptospirosis. Empiric treatment with doxycycline was initiated, and the diagnosis was confirmed via positive Leptospira IgM (Enzyme-Linked Immunosorbent Assay - ELISA) testing. Despite the severe nature of the illness, the patient showed gradual recovery following supportive care, including hemodialysis and liver protection strategies. This case underscores the importance of early recognition and empirical treatment of leptospirosis in severe cases, as timely intervention can significantly improve outcomes and highlights the need for public health strategies targeting reservoir control and community awareness to avoid its outbreak in the community. Early diagnosis and intensive supportive

care, including organ-specific management, are critical for mitigating the high morbidity and mortality associated with multi-organ dysfunction in leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Agampodi S., Jayasundara D., Warnasekara J., Agampodi T., Senavirathna I., Menike D., Aswaddumage D., Sewwandi M., Kappagoda C., Premalal A., Kim H.Y., Rajapakse S., Zellweger R.M.

Subclinical leptospiral infections and antibody waning during pregnancy: a population-based cohort study from rural Sri Lanka

(2026) American Journal of Tropical Medicine and Hygiene, 114 (5), pp. 848 - 856
DOI: 10.4269/ajtmh.25-0553

ABSTRACT: Leptospirosis is a zoonotic infection with significant mortality, yet its burden is underestimated due to diagnostic limitations. The dynamics of naturally acquired anti-Leptospira antibodies, particularly during pregnancy, remain poorly understood. This study examined the seroincidence of leptospiral infection among a cohort of pregnant women and characterized longitudinal antibody kinetics in an endemic setting. Paired sera were collected from a population-based pregnancy cohort in Anuradhapura, Sri Lanka. Women were enrolled before 12 weeks of gestation and followed up between 25–28 weeks. Data on sociodemographics, self-reported febrile illness, and hospital admissions were collected. Microscopic agglutination testing (MAT) was performed against 11 Leptospira serovars. Seroincidence was defined as seroconversion from non-reactive (<1:50) to reactive (≥1:50). Antibody kinetics were assessed using Gaussian accelerated failure time and proportional odds logistic regression models. Among 3,374 recruited women, 1,338 had paired samples. Of 1,245 seronegative at baseline, 22 (1.8%) seroconverted, yielding a seroincidence rate of 52.8/1,000 person-years (95% CI: 31.2–76.8), using the ≥1:50 definition; using a ≥1:100 cutoff, the seroincidence rate was 14.4 per 1,000 person-years (95% CI: 5.3–31.4). No significant differences in pregnancy outcomes were observed between seroconverts and non-seroconverts. Among 93 women with baseline antibody titers ≥1:50, 14 (15.1%) seroreverted to <1:50, 12 (12.9%) showed a decline in titers but remained ≥1:50, 56 (60.2%) remained unchanged, and 11 (11.8%) showed an increase in antibody titers. Antibody decay rates ranged from +0.353 to –0.789 log2 units/30 days (mean: –0.074), with faster decay at higher baseline titers. This study reveals frequent, asymptomatic Leptospira exposure and rapid antibody decline during pregnancy, highlighting substantial silent transmission and the limitations of current surveillance tools in endemic settings.
LANGUAGE OF ORIGINAL DOCUMENT: English

Esteves S.B., Grolla A.C.M.M., Cortez A., de Paula Nhanharelli J., de Lima E.M., Fornazari F., da Silva L.G.M., do Amaral M.V.R., Miotto B.A.

A systematic review and meta-analysis of *Leptospira spp*. infection in wildlife: contributions to a One Health perspective

(2026) One Health, 22, art. no. 101433
DOI: 10.1016/j.onehlt.2026.101433

ABSTRACT: Leptospirosis is a globally distributed zoonosis maintained by a wide range of mammalian hosts, yet the contribution of wildlife to pathogen circulation from a quantitative perspective remains poorly estimated. This PROSPERO-registered systematic review and meta-analysis aimed to estimate infection rates across wildlife taxa and document which Leptospira species, serogroups, or serovars have been detected in these hosts through direct detection of the bacterium. A systematic search of PubMed, Scopus, and Web of Science

and other four databases identified studies published between 2002 and 2022 reporting direct detection of Leptospira spp. in wild animals. Eligible studies included observational investigations using molecular, culture-based, or immunohistochemical methods to detect the pathogen in biological samples. Data were extracted and synthesized using meta-analytical models to estimate infection prevalence and urinary shedding across taxa while descriptive analyses summarized the diversity of infecting species and serogroups. To avoid bias from synanthropic rodents, studies involving Rattus rattus, Rattus norvegicus, and Mus musculus were excluded from all analyses. A total of 263 studies met the inclusion criteria, comprising 54,389 individuals from 648 wildlife species. The pooled prevalence of infection was 14.5%, and renal shedding reached 16.6%, with substantial variation among taxa. Rodents and bats were the most frequently sampled hosts and exhibited the broadest diversity of Leptospira species and serogroups. Isolation data identified L. interrogans, L. kirschneri, and L. borgpetersenii as the most frequently detected species, while serogroups Icterohaemorrhagiae, Australis, and Pomona predominated among isolates. Evidence from non-mammalian taxa, although limited, suggests that reptiles and amphibians may contribute to transmission in specific ecological contexts. These findings highlight the importance of integrated wildlife surveillance and improved pathogen characterization to better understand leptospirosis ecology within a One Health framework. We advocate for improved Leptospira isolation protocols and expanded application of molecular tools capable of serovar-level prediction, coupled with open data-sharing platforms to enhance global collaboration.
LANGUAGE OF ORIGINAL DOCUMENT: English

Glickman H., Federbush M., Silver L.
Severe leptospirosis with pulmonary hemorrhage
(2026) Critical Care Medicine, 54 (3S)
DOI: 10.1097/01.ccm.0001186732.91688.7d
LANGUAGE OF ORIGINAL DOCUMENT: English

Hobson S.J., Zai B., Vyn C.M., Robertson A., Mallare J., Weese J.S., Epp T., Slater J., Murphy H.M., Grant L.E.
Impacts of meteorological factors on zoonotic infections in domestic cat and dog populations: a scoping review of international evidence
(2026) One Health, 22, art. no. 101442
DOI: 10.1016/j.onehlt.2026.101442
ABSTRACT: Climate change is anticipated to increase the occurrence of zoonotic infections in domestic animals through changes in meteorological factors (e.g., temperature, precipitation) which create environmental conditions more favourable for pathogen persistence and transmission. The aims of this review were to identify climate-sensitive zoonotic infections in domestic cats and dogs, and the meteorological factors that influence these infections. The search strategy was applied to three academic databases and greyliterature sources to identify studies reporting on associations between meteorological variables and zoonotic infections or vectors in cats and/or dogs. Screening, data extraction, and analysis followed established scoping-review methods. After de-duplication, 40 studies met the eligibility criteria. Dogs were most commonly studied (31/40, 77.5%), followed by cats (5/40, 12.5%) and mixed cat–dog studies (4/40, 10%). Studies on non-vector-transmitted bacterial (n = 8), parasitic (n = 5), viral (n = 3) and fungal infections (n = 1) were represented. Vector-transmitted infections were also identified (27/40, 68%) Meteorological exposures most frequently analyzed were temperature (n = 39), precipitation (n = 24), humidity (n = 4), and windspeed

(n = 3). Broadly, higher temperatures were positively associated with several vector-borne infections while precipitation was commonly associated with increased leptospirosis and some vector-borne infectious. Relationships between meteorological factors and zoonotic infection showed pathogen- and context-specific associations. Several studies reported relevant interactions (e.g., with season, land cover). Non-linear or lagged effects were often suggested but inconsistently modelled. Evidence indicates temperature, precipitation, humidity, and wind conditions can influence risk of zoonotic infection in population- and pathogen-specific contexts; however, geographical coverage and methodological consistency were limited.
LANGUAGE OF ORIGINAL DOCUMENT: English

Zheng B., Zhang M.

Emergence of a highly pathogenic *Leptospira* serogroup 56601 revealed by 15-year surveillance and experimental validation in a rural area of Zhejiang Province, China

(2026) Vector borne and zoonotic diseases (Larchmont, N.Y.), 26 (6), pp. 331 - 338
DOI: 10.1177/15303667261422299

ABSTRACT: BACKGROUND: Leptospirosis is a globally important zoonosis maintained by chronically infected animal reservoirs, yet its long-term eco-epidemiological dynamics remain poorly understood. Southeast China has historically been an endemic region, but changing climate and land use may be reshaping Leptospira transmission. METHODS: We conducted 15-year longitudinal surveillance (2009-2024) in Pan'an County, Zhejiang Province, integrating field sampling of rodents and other hosts, serogroup identification, multilocus sequence typing, and experimental mouse infection. Annual rainfall, host data, and molecular analyses were combined to assess temporal trends, serogroup turnover, and virulence differences between classical and emerging lineages. RESULTS: Rodent Leptospira positivity persisted annually (1.2-18%) with peaks during heavy-rainfall years, while human cases declined after 2015. The host range narrowed from multispecies detection to rodent dominance after 2020. Serological and phylogenetic analyses revealed a post-2020 emergence of serogroup 56601, which replaced historical O1/O6 lineages and formed a genetically compact cluster, suggesting recent clonal expansion. In mice, the 56601 strain caused higher renal bacterial loads, more severe tubular injury, and stronger cytokine responses than O1. CONCLUSIONS: Long-term surveillance demonstrates rapid ecological and genetic turnover of Leptospira and identifies 56601 as an emerging lineage with increased pathogenic potential in endemic regions.
LANGUAGE OF ORIGINAL DOCUMENT: English

Thibeaux R., Genthon P., Govan R., Selmaoui-Folcher N., Peltier A., Kainiu M., Soupé-Gilbert M.-E., Yu O., Tramier C., Wijesurriya K., Goarant C.

Comparison of *Leptosira* concentrations in two rivers within contrasting catchments in a leptospirosis hotspot

(2026) Journal of Contaminant Hydrology, 281, art. no. 104984
DOI: 10.1016/j.jconhyd.2026.104984

ABSTRACT: Leptospirosis is a neglected disease that primarily impacts small islands in the South Pacific region. We compared pathogenic Leptospira concentration in rivers from two contrasting catchments in New Caledonia, a leptospirosis hot spot. The Tho and Foa catchments are located on the humid east coast and on the drier west coast, respectively. Similar concentrations of pathogenic Leptospira (pL) were found in both catchments although no extreme events were sampled in Foa and two cyclones were sampled in Tho.

Moreover, significant pL concentrations were found in Foa during a 25 mm rainfall event as well as during the low flow sampling. A total of 402 measurements (226 in Tho and 176 in Foa) and 804 augmented data points were used to build a feedforward neural network model. This model explained 71% and 74% of the variance of the decimal logarithm of pL concentration data, when trained with rainfall or water level data, respectively. However, we were unable to extend a model trained on the Tho or Foa catchment to the other one.The upper envelope of the decimal logarithm of pL concentration, representing the maximum concentration expected over a few hours period was identified as the relevant signal for issuing warnings to the local population. Neural network models designed for the envelope were built and trained more quickly than augmented data models. It is concluded that envelope models based on rainfall data extracted from weather forecasts could be used to create local early warning systems for leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Şahin A.M., Koç İ.A., Çetin S.

Weil's disease: rapid recovery following corticosteroid treatment: a case report

(2026) Revista do Instituto de Medicina Tropical de Sao Paulo, 68, art. no. e35
DOI: 10.1590/S1678-9946202668035
ABSTRACT: Leptospirosis is a zoonotic infection with a range of clinical findings, ranging from a mild, self-limited illness to a severe, life-threatening disease known as Weil's disease. The role of adjunctive corticosteroid therapy in severe leptospirosis remains controversial. We report a 41-year-old male with a history of intravenous drug use, regular alcohol consumption, and exposure to contaminated freshwater, who presented with fever, myalgia, vomiting, jaundice, thrombocytopenia, and acute kidney injury. Serological testing via the microagglutination test (MAT) was negative at admission, and empirical antibiotic therapy with ceftriaxone was initiated. Despite appropriate antimicrobial treatment and supportive care, including hemodialysis, the patient developed progressive hyperbilirubinemia and persistent thrombocytopenia. A repeat MAT performed one week later confirmed infection with Leptospira interrogans serovar Pomona. Due to ongoing clinical deterioration, methylprednisolone (1 mg/kg/day) was initiated, resulting in a dramatic clinical and laboratory improvement within 24 h. This rapid response suggests a potential role for corticosteroid therapy in selected patients with severe leptospirosis; however, further studies are required to establish its efficacy and safety.
LANGUAGE OF ORIGINAL DOCUMENT: English

Nelwan E.J., Anggraini Y.W., Zanjabila S., Setiawan B., Handayani F.D., Erlina L., Fadilah F., Baird J.K., Hamers R.L., Suwarti S.

Molecular detection and genetic characterisation of a large flood-borne outbreak of human leptospirosis in Jakarta, Indonesia: a retrospective analysis of surveillance data

(2026) PLoS neglected tropical diseases, 20 (5), pp. e0014243
DOI: 10.1371/journal.pntd.0014243
ABSTRACT: Recurring outbreaks of leptospirosis in flood-prone areas caused by heavy rainfall pose a major public health concern, particularly in megacities such as Jakarta, Indonesia. From December 2019 through February 2020, Jakarta experienced a large leptospirosis outbreak due to extensive flooding following extreme monsoonal rainfall. We conducted a comprehensive retrospective analysis of the outbreak based on complete surveillance data from all five districts and 42 of 44 subdistricts in Jakarta. A total of 282 cases (97 suspected,

153 probable, and 32 confirmed) were reported in West (n = 162), South (n = 64), East (n = 30), North (n = 14) and Central (n = 12) Jakarta. Cases were predominantly adult males exposed to floodwaters. Of 241 cases tested, 164 (68.0%) had a positive IgM-based rapid diagnostic test (RDT). Of 118 cases tested with TaqMan RT-PCR targeting lipL32, 32 (27.1%) were positive. Of 95 cases tested with both assays, the combined detection rate was 74.7% (71/95); of whom 27 were positive by both RDT and RT-PCR. RT-PCR identified 5 additional RDT-negative cases, all of whom had fever <7 days. We sequenced 42 archived blood samples using Multi Locus Sequence Typing (MLST) and identified Leptospira interrogans and L. borgpeterseni as the predominant species. The findings emphasise the importance of rapid and early laboratory-based diagnosis during leptospirosis outbreaks in flood-prone urban areas, to better target public health interventions. Climate-resilient urban planning is critical for vulnerable megacities in low-resource settings, where complex environmental and infrastructural challenges are compounded by the effects of a changing climate. Copyright:
LANGUAGE OF ORIGINAL DOCUMENT: English

Dutra F.R.L.S., Müller G.V., Forgioni F.P., Gómez A., Nóbrega R., López M.S.

Linking climate variability, topography, and health: SACZ–ENSO influences on leptospirosis in Minas Gerais, Brazil

(2026) Regional Environmental Change, 26 (2), art. no. 105

DOI: 10.1007/s10113-026-02592-0

ABSTRACT: Rainfall extremes during the austral summer frequently trigger floods in Brazilian cities and are strongly associated with leptospirosis outbreaks. This study investigates how the South Atlantic Convergence Zone (SACZ) and its modulation by the El Niño-Southern Oscillation (ENSO) influence precipitation anomalies and disease incidence in Minas Gerais (MG), Brazil. Atmospheric circulation during active SACZ phases (DJF) was analyzed using synoptic fields of moisture divergence, vertical velocity, and wind divergence. Results show that interannual and intraseasonal variability strongly modulate precipitation extremes, particularly in southeastern MG. The geomorphology of this region, characterized by steep slopes and deeply dissected valleys, amplifies SACZ-related convection and accelerates runoff, creating favorable conditions for disease transmission. During El Niño years, SACZ displacement southward enhanced localized rainfall anomalies, while La Niña years intensified continental SACZ activity and widespread convection, still concentrating cases in the southeast. Two case studies (2003 and 2012) confirmed the role of SACZ-ENSO interactions in driving both floods and leptospirosis outbreaks. These findings underscore the importance of integrating climate information, topography, and health surveillance to improve early warning systems and adaptation strategies under climate change.
LANGUAGE OF ORIGINAL DOCUMENT: English

Patiño-Gómez S., Naranjo-Vargas L.F., Aguirre-Acevedo D.C., Aguirre-Ramírez N.J., Wunder E.A., Jr, de Oliveira F., das Chagas-Xavier S.C., Quintero-Vélez J.C.

Epidemiological study of leptospiral interaction in bovine farms in rural areas of Colombia: a One Health approach

(2026) PLoS neglected tropical diseases, 20 (5), pp. e0014231

DOI: 10.1371/journal.pntd.0014231

ABSTRACT: BACKGROUND: Leptospira are zoonotic agents with a complex transmission cycle that affects low-income and impoverished populations and causes significant economic losses in livestock. OBJECTIVE:

To evaluate the interaction between people, animals, and the environment related to Leptospira infection in bovine farms in Urabá, Antioquia. METHODS: An exploratory cross-sectional study was conducted on cattle farms in Urabá, Antioquia. The proportion of pathogenic Leptospira infection in bovine and canine urine and environmental contamination in water and soil samples was estimated using molecular assays. Additionally, Leptospira seropositivity in humans, cattle, and canines was determined using the microagglutination test (MAT). Evaluation of composition characteristics of landscape was done and potential flooding areas were estimated. The domestic animals and human populations were characterized through descriptive analysis using productive and reproductive data and sociodemographic information, respectively. Then, associations between seropositivity/infection, antibody titers, Leptospira serogroups/species in cattle, canines, and humans, and productive, farms and landscape variables we explored using a mixed-data factor analysis. RESULTS: The proportion of seropositivity in cattle wa 76.9% (380/494). The most frequent serogroups on MAT were Mini, Tarassovi, Ballum, and Sejroe. In addition, molecular analysis indicated an infection rate of 4.0% (20/494) of the species L. borgpetersenii in cattle. Seropositivity in humans was 4.1% (3/73), with serogroups Icterohaemorrhagiae, Autumnalis, and Sejroe. Thirty-three percent (5/15) of dogs were seropositive for serogroups Canicola, Icterohaemorrhagiae, Ballum, and Autumnalis. The presence of L. tipperaryensis was detected in water and species L. weilii and L. cinconiae in soil. Evidence of high exposure to Leptospira was found in cattle. An association was also found between the serogroups circulating in humans and dogs (Autumnalis) and in humans and cattle (Sejroe), as well as forest fragmentation. CONCLUSIONS: The importance of addressing the epidemiology of Leptospira infection from a comprehensive One Health approach is highlighted.
LANGUAGE OF ORIGINAL DOCUMENT: English

Pinto de Oliveira G.A., Raymundo E.F., Silva Gonçalves G., Santos de Souza A., Correia D.S., Xavier Reis G., Samico-Fernandes Torres E.F., Carneiro Ferrer G., Di Azevedo Nogueira M.I., Mota R.A.

Molecular detection of pathogenic Leptospira spp. in mares with reproductive disorders enrolled in embryo transfer programs

(2026) Journal of Equine Veterinary Science, 163, art. no. 105926
DOI: 10.1016/j.jevs.2026.105926
ABSTRACT: Background Equine genital leptospirosis (EGL) is associated with reproductive disorders in mares. However, its occurrence in embryo transfer (ET) programs remains poorly characterized. Aims/Objective Given the scarcity of data on the circulation of Leptospira spp. in mares enrolled in ET programs, this study aimed to investigate the serological and molecular occurrence of Leptospira spp. in mares with a history of reproductive disorders from 13 stud farms dedicated to embryo transfer in Brazil. Methods Serum and endometrial cytobrush samples (ECS) were collected from 70 unvaccinated mares. Serological analysis was performed using the microscopic agglutination test (MAT), and molecular detection was conducted by PCR targeting the lipL32 gene. Positive samples were subjected to sequencing. Results In the MAT, 68.6% (48/70; 95% CI: 56.9–78.2) of mares were reactive at titers ≥ 1:100. PCR detected pathogenic Leptospira DNA in 45.7% (32/70; 95% CI: 34.5–57.4) of ECS, with at least one positive mare identified in 92.3% (12/13) of farms. Sequencing of one sample showed ≥ 99% nucleotide identity with Leptospira interrogans . Functional classification was significantly associated with PCR positivity, with recipient mares presenting higher odds of detection compared to donors (OR = 3.15; 95% CI: 1.05–9.43; p = 0.040). Conclusions These findings demonstrate high serological exposure and molecular evidence of infection in the

reproductive tract of mares with reproductive disorders, reinforcing the importance of molecular investigation in breeding herds enrolled in ET programs.
LANGUAGE OF ORIGINAL DOCUMENT: English

Gadelha Farias L.A.B., Neto Viana O.M., Sobrinho Pereira Lima E., de Almeida Vale C.L., Bezerra Silva J.G., de Francesco Daher E., de Alcântara Fernandes Teixeira G., Neto Silva Lima A., Coelho Silva T.M., de Oliveira Salaroli M., Neto Vieira Perdigão L.

Leptospirosis-associated meningitis in an urban tropical endemic setting in northeastern Brazil: three new cases and a meta-summary of 176 reported cases

(2026) PLoS neglected tropical diseases, 20 (5), pp. e0014315
DOI: 10.1371/journal.pntd.0014315

ABSTRACT: BACKGROUND: Leptospirosis is a globally distributed zoonotic disease with a broad clinical spectrum. Central nervous system (CNS) involvement is uncommon and under-recognized, and leptospiral-associated meningitis (LAM) is primarily described in isolated case reports and small series. No study to date has integrated institutional cases with published reports to characterize cerebrospinal fluid (CSF) profiles in LAM. METHODS: We conducted a retrospective cohort study of patients with meningitis, encephalitis, or meningoencephalitis admitted to a tertiary infectious diseases center in northeastern Brazil. Cases of LAM were identified among patients with aseptic meningitis. In parallel, a narrative literature review was performed, and a meta-summary of published cases was constructed. CSF parameters from both datasets were extracted and analyzed using descriptive statistics and graphical (boxplot) methods. RESULTS: Among 809 patients with meningitis or encephalitis, 447 presented with aseptic meningitis. Three cases (0.67%) of LAM were identified, presenting as isolated meningitis or meningoencephalitis. Among 179 patients, including 176 identified in the medical literature, mean CSF values were: cellularity 68 cells/mm3 (range, 30-7800), lymphocytes 73% (0-100), neutrophils 18% (0-96), glucose 60 mg/dL (0-140), and protein 67-90 mg/dL (31-2590). CSF findings in the institutional cohort showed mild to moderate pleocytosis with lymphocytic predominance, normal to elevated glucose levels, and increased protein concentrations. The integrated analysis of cohort and published cases-the first combined CSF profile synthesis of LAM-demonstrated a consistent pattern of lymphocytic pleocytosis, mildly elevated cellularity, preserved glucose levels, and increased protein, with substantial inter-case variability. CONCLUSION: LAM is an uncommon but clinically relevant cause of CNS infection in endemic settings. This study provides the first integrated synthesis of CSF profiles from both institutional cases and published literature, supporting a characteristic but variable CSF pattern in leptospiral CNS disease. Clinicians should consider leptospirosis in patients with aseptic meningitis in endemic areas, particularly when epidemiological risk factors are present. Improved diagnostic capacity and prospective studies using standardized criteria are needed to better define disease burden and refine diagnostic and therapeutic approaches.
LANGUAGE OF ORIGINAL DOCUMENT: English

Fahlefi M.I.R., Puspitasari Y., Raharjo H.M., Zilfiarani C.N., Wijayan-To R., Nnabuike U.E.

Environmental and farm management determinants of *Leptospira* seropositivity in domestic pigs: a systematic review within a one health framework

(2026) Indian Journal of Animal Production and Management, 42 (Special Issue), pp. 22 - 34
DOI: 10.48165/ijapm.2026.42.SI.5

ABSTRACT: Leptospirosis is a globally distributed zoonotic disease caused by pathogenic Leptospira species and represents a significant threat to both public health and livestock production systems. Domestic pigs (Sus scrofa domesticus) act as important maintenance hosts capable of harboring and shedding leptospires without obvious clinical symptoms, thereby contributing to environmental contamination and zoonotic transmission. Despite numerous epidemiological investigations, evidence regarding environmental and farm management determinants of leptospiral infection in swine populations remains fragmented across regions and production systems. This study systematically reviewed and synthesized the available evidence on environmental and management factors associated with Leptospira seropositivity in domestic pigs worldwide. The review followed PRISMA 2020 guidelines. Literature searches were conducted in four major databases Scopus, Web of Science, PubMed, and ScienceDirect using keywords related to leptospirosis, domestic pigs, seroprevalence, environmental determinants, and farm management practices. After screening and applying predefined eligibility criteria, fifteen studies were included in the qualitative synthesis. The findings demonstrate that leptospiral exposure in pigs is shaped by complex eco-epidemiological interactions. Environmental conditions such as high rainfall, flooding, humid climates, and contaminated water sources were consistently associated with increased infection risk. Wildlife reservoirs, particularly rodents and feral pigs, were frequently identified as important sources of environmental contamination. Farm management practices also played a crucial role; poor sanitation, inadequate rodent control, and weak biosecurity measures increased infection risk, whereas intensive systems with strict biosecurity were associated with reduced seropositivity. These findings highlight the importance of integrated prevention strategies combining improved farm biosecurity, sanitation, and pest control with environmental management approaches. Such strategies align with the One Health framework, emphasizing the interconnected roles of environmental, animal, and human health in controlling leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English

Chen X., Liu X., Liu J., Huang H., Zhang W., Xie X., Cao Y.

Leptospiral dissemination is restrained by liver macrophages through Clec4d-driven capture via C/EBPβ activation

(2026) PLOS Pathogens, 22 (5 May), art. no. e1014232
DOI: 10.1371/journal.ppat.1014232

ABSTRACT: Leptospirosis, caused by pathogenic Leptospira species, is a globally significant zoonotic disease with high morbidity and mortality. However, the organs or cells mainly involved in capturing circulating leptospires and the related mechanisms remain poorly understood. In this study, we firstly proved that the liver was the primary organ that captured leptospires during the very early intravascular phase of infection in mice. Then, we used unbiased flow sorting of leptospires-positive cells and intravital microscopy of mice infected with leptospires, and found that liver macrophages were the main leptospires-capturing immune cells. The depletion of liver macrophages abolished the ability of liver to capture leptospires and prompted leptospiral spread in other organs. The C-type lectin receptor signaling pathway and Clec4d were identified as the differential pathways and gene through RNA-seq analysis, respectively. The ectopic expression of Clec4d in HEK-293T cells or treatment with a Clec4d inhibitor, mannan proved that Clec4d functioned as a capture receptor of leptospires. Mechanistically, the transcription factor CCAAT/ enhancer-binding protein beta (C/EBPβ) was activated and directly bound to the promoter of Clec4d to promote the expression of Clec4d in liver macrophages, thereby enhancing leptospiral capture. Mice treated with C/EBPβ inhibitor showed a significant inhibition of liver macrophages in capturing leptospires and increased leptospiral load in other

organs. Our findings identify a novel mechanism by which the liver macrophages restrict leptospiral dissemination through C/EBPβ-Clec4d axis, and suggest a therapeutic strategy to prevent leptospiral dissemination through enhancing liver macrophages functions.
LANGUAGE OF ORIGINAL DOCUMENT: English

Sharma S., Gupta D., Tiwari A., Singh A.P., Asati P., Shukla S., Shrivastava K., Sharma R., Tiwari S.P.
Seroprevalence of bovine leptospirosis using indirect ELISA
(2026) Indian Journal of Animal Research, 60 (5), art. no. B-4951, pp. 902 - 905
DOI: 10.18805/IJAR.B-4951
ABSTRACT: Background: Leptospirosis is a zoonotic bacterial disease causing abortion, stillbirths and loss of milk production in livestock resulting in huge economic losses. Leptospirosis in cattle has been under-reported and under-diagnosed in India due to non-specific symptoms, complex laboratory tests, fastidious nature of bacterium and lack of proper diagnostic facilities. Scanty data pertaining to epidemiological status of leptospirosis is available in land locked states of India including Madhya Pradesh, thus to fulfil the gap, the current work was conducted to investigate seroprevalence of leptospirosis in cattle. Methods: In the present study, cattle with a history of repeat breeding, abortion, haemogalactia and mastitis, were screened from various organized and unorganized farms of Jabalpur. A total of 300 blood samples were collected from suspected cattle and serum was separated. Enzyme linked Immune-sorbent assay was done as per the guidelines. Result: The seroprevalence of leptospirosis among suspected cases was 48.67 per cent, it was significantly higher in organized sector in cattle with the history of abortion followed by repeat breeding. High seropositivity was reported in older cattle.
LANGUAGE OF ORIGINAL DOCUMENT: English

Luo E.L., Hillesland H., Siu A.M., Kimata C., Bratincsak A.
Leptospirosis in Hawai'i: a retrospective study within a health care system, 2010-2021
(2026) Hawaii Journal of Health and Social Welfare, 85 (5), pp. 103 - 110
DOI: 10.62547/PAFX9250
ABSTRACT: Leptospirosis is a worldwide zoonotic disease with diverse clinical manifestations, ranging from mild flu-like symptoms to a life-threatening illness. It is often misdiagnosed or underreported due to the non-specific and overlapping clinical presentations with other febrile illnesses. Hawai'i has the highest incidence of leptospirosis in the United States, but there is a paucity of data regarding recent incidence and the current leptospirosis trends in Hawai'i. The objective of this study was to determine the epidemiology of patients with leptospirosis at one of the largest health care systems in Hawai'i and to identify risk factors associated with the severe illness. A retrospective study was conducted on patients with clinically suspected or confirmed leptospirosis diagnosis from 2010-2021. Of the 164 patients identified during the timeframe, 81 were outpatients with mild illness and 83 were inpatients exhibiting a more severe infection. Patients with the severe infection had a higher frequency of abnormal laboratory tests, including abnormal electrolytes, kidney and liver function tests. This group was more likely to suffer from acute kidney disease, sepsis, and rhabdomyolysis. More cases of leptospirosis were observed in the drier summer months of Hawai'i, and there were more cases in the areas with heavier rainfall on the island of Kaua'i. Risk factors for severe leptospirosis included being Native Hawaiian/Pacific Islander and elevated body mass index. Further studies on leptospirosis may reveal

how patients with the above risk factors may benefit from early detection and treatment, potentially leading to reduced disease severity, and decreased hospitalization length.
LANGUAGE OF ORIGINAL DOCUMENT: English

Wang D., Adderley P., Chan C.
Heavy rain wielding Weil disease: a rare case of leptospirosis in Baltimore, Maryland
(2026) Critical Care Medicine, 54 (3S)
DOI: 10.1097/01.ccm.0001183620.97318.34
LANGUAGE OF ORIGINAL DOCUMENT: English

Vinoth Kumar S., Mahavidhya R., Shobana A., Ali Akram S.M., Varshini E., Swathi G.
Exploring antileptospiral agents of phytochemicals from *Cardiospermum halicacabum* through in silico docking approach
(2026) Recent Advances in Anti-Infective Drug Discovery
DOI: 10.2174/0127724344431025260212190455
ABSTRACT: Introduction: The objective of this study was to identify potential natural inhibitors of peptide deformylase (PDF), an essential bacterial enzyme involved in leptospiral survival. By targeting PDF, the study aims to explore alternative therapeutic options for leptospirosis using phytochemicals derived from Cardiospermum halicacabum. Methods: A total of 22 phytochemicals reported from C. halicacabum were selected for this in silico study. Drug-likeness, pharmacokinetic properties, and toxicity profiles were evaluated using SwissADME and ProTox-II. Based on Lipinski's rule of five, 19 compounds were shortlisted and subjected to molecular docking using PyRx software to examine their binding interactions with peptide deformylase. Results: Docking results showed that stigmasterol (–9.3 kcal/mol), β-sitosterol (–8.7 kcal/mol), and chrysoeriol (–8.5 kcal/mol) had stronger binding affinities toward PDF than the reference drug penicillin (–7.3 kcal/mol). Interaction analysis revealed that these compounds formed stable hydrogen bonds and hydrophobic interactions with key active-site residues of the enzyme. Discussion: The observed binding patterns suggest that the selected phytochemicals may effectively interfere with PDF activity. The stronger binding affinity compared to the standard drug highlights their potential as natural anti-leptospiral agents. This study also demonstrates the value of computational approaches in identifying promising lead compounds at an early stage of drug discovery. Conclusion: Overall, the findings indicate that phytochemicals from Cardiospermum halicacabum, particularly stigmasterol, β-sitosterol, and chrysoeriol, show promising inhibitory potential against peptide deformylase. Further experimental studies are needed to confirm these results and assess their potential application in the treatment of leptospirosis.
LANGUAGE OF ORIGINAL DOCUMENT: English