PPVs were similar. A relatively high difference explains why F14.1158H was not detected by several PCRs designed for detecting PPV, which should be considered when designing diagnostic protocols. These phylogenetic results and sequence identities, together with the high guanine and cytosine content and disease characteristics, indicate that F14.1158H represents a novel PPV, designated equine parapoxvirus (EqPPV). The final taxonomic position and the possible differences of human and equine-derived variants (6) will require more data.

Most known PPVs are zoonotic, and any novel virus detected in animals should be treated with concern (6). Thus, considering the tendency of PPVs to cause diseases in humans, EqPPV has a zoonotic potential. It is therefore important to sample humans and other animals in contact with infected horses. It is also critical to establish diagnostic protocols due to low specificity and sensitivity of pan-PPV PCR for EqPPV (Appendix). In terms of veterinary importance, this virus poses a threat for horses that could translate to financial losses for owners. The information provided here will inform development of proper diagnostic tools and also enable establishment of prevention measures.

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Rickettsial Disease Outbreak, Mexico, 2022

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Beginning in 2022, Nuevo Leon, Mexico, experienced
an outbreak of rickettsioses that is still ongoing despite
multidisciplinary control efforts. A total of 57 cases have
been confirmed, particularly affecting children. We re-
port a high mortality rate among hospitalized persons in
Nuevo Leon. Continuing efforts are required to control
the outbreak.

Rickettsioses are life-threatening vectorborne in-
fections transmitted by several arthropods, such
as ticks, lice, fleas, and mites (1,2). Rickettsial dis-
eases are an emerging threat in Mexico, particularly
in the northern regions, where previous outbreaks
have been reported (3). In 2022, the local epidemio-
logic surveillance department reported 57 confirmed
and >500 probable rickettsial disease cases in Nuevo
Leon, a semiarid state in northeast Mexico. This un-
precedented and alarming increase represents the
highest number of rickettsial disease cases in a single
year in this region, showing significant contrast with
2021, when only 13 confirmed cases were reported.
Although surveillance and preventive measures are
continuously in place, additional multidisciplinary
strategies were established after the outbreak was de-
clared in May 2022.

The Mexican Institute of Epidemiology de-
fines a probable case of rickettsiosis as a patient
with fever and ≥2 compatible clinical and labora-
tory signs. Technicians at the State Laboratory of
Public Health of Nuevo Leon perform real-time
PCR targeting the *gltA* gene on all probable cases
identified <7 days after symptom onset. A positive
PCR result requires the presence of a well-defined
sigmoid curve, where the 3 PCR-reaction phases
are distinguished, plus a quantification cycle value
≤38. State laboratory staff use an indirect immuno-
fluorescence antibody assay to analyze all samples
collected 7–14 days after symptom onset and con-
firm cases through real-time PCR or, retrospective-
ly, with seroconversion by immunofluorescence

Table. Clinical and paraclinical characteristics of patients with rickettsioses during outbreak in Neuvo Leon, Mexico, 2022

| Characteristic | Total, n = 57 | No. (%) patients | | p value† |
		Cured, n = 21	Died, n = 36	
Patient age, y				0.106
<4	8	1 (1.7)	7 (12.2)	
4–12	28	12 (21)	16 (28)	
13–18	8	1 (1.7)	7 (12.2)	
>18	13	7 (12.2)	6 (10.5)	
Patient sex				0.768
F	34	12 (21)	22 (38.5)	
M	23	9 (15.7)	14 (24.5)	
Clinical signs‡	n = 48	n = 14	n = 34	
Anemia				**0.012**
Yes	32	11 (22.9)	21 (43.7)	
No	16	3 (6.2)	13 (27)	
Thrombocytopenia				**0.007**
Yes	47	13 (27)	34 (70.8)	
No	1	1 (2)	0	
Leukocytosis				**0.01**
Yes	17	3 (6.2)	14 (29.1)	
No	31	11 (22.9)	20 (41.6)	
Leukopenia				**0.014**
Yes	4	2 (4.1)	2 (4.1)	
No	44	12 (25)	32 (66.6)	
Treatment with doxycycline				0.074
Yes	52	21 (36.8)	31 (54.3)	
No§	5	0	5 (8.7)	
Time to treatment initiation, h	n = 52	n = 21	n = 31	**0.007**
≤24	4	4 (7.6)	0	
>24	48	17 (32.6)	31 (59.6)	

*n values within columns indicate number of patients in category.
†By χ^2 test. Bold indicates statistical significance.
‡Anemia: female, hemoglobin <11.6 g/dL; male, hemoglobin <13.2 g/dL). Thrombocytopenia: female, platelets <157 × 10^9/L; male, platelets <135 × 10^9/L.
Leukocytosis: leukocytes >9.6 × 10^9 cells/L. Leukopenia: leukocytes <3.4 × 10^9 cells/L.
§Five patients died before treatment and had their diagnosis confirmed by autopsy.

antibody analysis (*4*). The data discussed in this report comprise all 57 confirmed cases in 2022.

Compared with results from 2021, the incidence rate of rickettsioses in Nuevo Leon in 2022 rose from 0.2 to 0.9 cases/100,000 inhabitants. Most cases occurred in October (n = 14) and December (n = 9). The median patient age was 10 years (range 1–61 years); 59.6% of case-patients were female and 40.4% male. The pediatric population (≤18 years of age) represented 77% of all cases (Appendix Table, https://wwwnc.cdc.gov/EID/article/29/9/23-0344-App1.pdf). Most patients required hospitalization (n = 50), and all had a positive history of tick exposure within 2 weeks before symptom onset. More than half of cases (54%) originated in 2 remote municipalities of Nuevo Leon, where most patients had a positive contact history with stray dogs or cats. The most frequent clinical signs were fever (100%), petechial rash (56%), and tachycardia (40%) (Table). Predominant symptoms were headache (75%), abdominal pain (75%), myalgia (74%), and arthralgia (58%). Laboratory findings at hospital admission included anemia in 66% of case-patients, thrombocytopenia in 98% (median platelet count $25 \times 10^3/\mu L$), leukocytosis in 35%, and leukopenia in 8%.

Of the 57 case-patients, 52 were treated with doxycycline; the remaining 5 died before treatment and had their infections diagnosed through autopsy. The median time-to-treatment initiation from symptom onset was 4 days, and only 8% of the patients received prompt antibiotic therapy within the first 24 hours of symptom onset. More than half (63%) of the total case-patient population died, and median time from symptom onset to death was 5 days (range 2–17); median length of hospital stay was 1 day (range 0–41). The annual rickettsiosis mortality rate for the region was 0.6 deaths/100,000 inhabitants.

To determine clinical, laboratory, and demographic associations with mortality, we performed χ^2 testing by using SPSS Statistics software (IBM, https://www.ibm.com). We found statistically significant associations with mortality in patients with anemia (p = 0.012), thrombocytopenia (p = 0.007), leukocytosis (p = 0.01), and leukopenia (p = 0.014) at hospital admission. Likewise, a time-to-treatment initiation of 24 hours was associated with survival (p = 0.007). Among the 57 cases, 4 were confirmed as spotted fever group rickettsiosis because of seroconversion to *Rickettsia rickettsii* antigens, 5 seroconverted to *R. typhi* and were confirmed as typhus group rickettsiosis, and the remaining 48 cases were tested by molecular analysis and were confirmed as simply rickettsiosis (*Rickettsia* sp.)—that is, PCR did not discriminate between spotted fever group and typhus group rickettsiae.

An alarming feature of this ongoing outbreak is its high fatality rate (63%). The most recent outbreaks of rickettsiosis in Mexico reported fatality rates of 40% in Sonora and 29% Baja California (*5,6*). In northeastern Mexico, the brown dog tick (*Rhipicephalus sanguineus*) is highly prevalent (Figure), posing a high risk for rickettsioses (*7*). Social determinants of health in hard-to-reach municipalities are thought to contribute to the rise in rickettsial disease cases. The abundance of stray animals, lack of healthcare accessibility, and poor disease knowledge may play a significant role in this outbreak.

To date, the local epidemiologic surveillance department has led various interventions in an attempt to control the outbreak by implementing vector control strategies, educating healthcare personnel of high-risk municipalities, designating community champions against rickettsioses, and raising public awareness through media. Clinicians on the Mexico–United States border should have a high index of suspicion of rickettsiosis among febrile patients and consider early empiric antibiotic treatment to reduce mortality risk.

Figure. Brown dog ticks collected by the vector control department of Nuevo Leon, Mexico, in a hard-to-reach municipality.
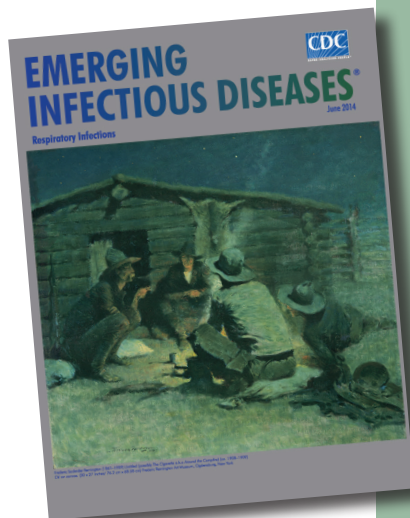
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etymologia revisited

Zika [zēkə] Virus

Zika virus is a mosquito-borne positive-sense, single-stranded RNA virus in the family *Flaviviridae*, genus *Flavivirus* that causes a mild, acute febrile illness similar to dengue. In 1947, scientists researching yellow fever placed a rhesus macaque in a cage in the Zika Forest (*zika* meaning "overgrown" in the Luganda language), near the East African Virus Research Institute in Entebbe, Uganda. A fever developed in the monkey, and researchers isolated from its serum a transmissible agent that was first described as Zika virus in 1952. It was subsequently isolated from a human in Nigeria in 1954. From its discovery until 2007, confirmed cases of Zika virus infection from Africa and Southeast Asia were rare. In 2007, however, a major epidemic occurred in Yap Island, Micronesia. More recently, epidemics have occurred in Polynesia, Easter Island, the Cook Islands, and New Caledonia.

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