

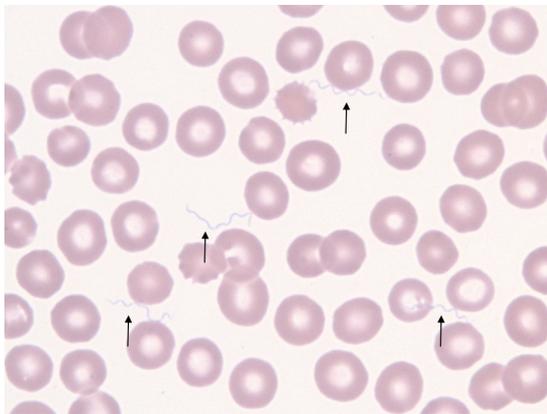
# Tick-Borne Relapsing Fever

## Introduction

Tick-Borne Relapsing Fever (TBRF) is caused by several species of bacteria in the genus *Borrelia*. Similarly to Lyme disease, which is caused by *Borrelia burgdorferi*, these bacteria are spread by ticks and cause non-specific clinical signs. In contrast to Lyme disease, TBRF *Borrelia* species are transmitted by soft ticks, which have different environmental and feeding habits. TBRF was originally characterized in people, but is an important consideration for veterinary patients in certain areas of the world. In the United States, TBRF has been mostly characterized in dogs, with rare case reports of equine abortion. TBRF results in circulating spirochete bacteria (spirochetemia), which can be visualized during microscopic blood smear examination. The disease is named “relapsing” fever because spirochetemia and clinical signs tend to wax and wane.

## Transmission

TBRF bacteria are transmitted by soft ticks in the genus *Ornithodoros*. In the United States, these ticks are endemic in certain western and southern states. The ticks are classically thought to inhabit seasonal cabins and caves. However, infections have been reported in people and animals without exposure to these environments. In general, these ticks spend



Blood smear from a dog with TBRF. Note the extra-cellular spirochete bacteria (black arrows) and lack of platelets.

less time on their hosts than other tick species and can transmit the TBRF bacteria very quickly.

## Clinical Presentation

Lethargy, inappetence, and pyrexia are the most common clinical signs associated with TBRF in dogs. Neurologic signs, such as lameness, ataxia, abnormal posture, and cranial nerve deficits, are occasionally observed. Significant thrombocytopenia (typically less than 70,000 platelets/ $\mu$ L) is noted during spirochetemic phases. Laboratory findings vary between patients and chronicity of the disease.

## Diagnosis

During times of spirochetemia, visualization of bacteria on standard blood films is considered diagnostic for TBRF in dogs. TVMDL also offers a PCR for TBRF *Borrelia* spp.

Test: *Borrelia* spp. (PCR)

Turnaround: This test is performed at the College Station laboratory with results in 1 to 3 business days.

Price: \$30

## Treatment

TBRF has been successfully treated in dogs with varying doses of doxycycline. On average, 6 mg/kg doxycycline by mouth every 12 hours for a minimum of three weeks appears to resolve clinical signs associated with TBRF. Physical examinations and CBCs should be performed throughout treatment.

## Prognosis

The majority of infected dogs have resolution of spirochetemia, pyrexia, and clinical signs with appropriate antibiotic treatment. In dogs with recurrent or ongoing neurologic disease, the underlying cause is not always known. Characterization of TBRF in dogs should become more complete as recognition of this disease increases.