Trypanosoma vivax infection Fact Sheet

1. Disease overview

Trypanosoma vivax is a protozoan parasite, part of the several species of the genus *Trypanosoma* which can cause trypanosomiasis. T. vivax affects multiple species of domestic and wild animals. The protozoan is transmitted cyclically by tsetse flies of the genus Glossina (restricted to sub-Sahara Africa and some regions of the Arabian Peninsula) or mechanically by biting flies, as well as through iatrogenic transmission (Fetene et al., 2021; WOAH, 2021b).

Trypanosomiasis caused by *T. vivax* is a WOAH-notifiable disease, but it is not listed in the European AHL.

2. Agent

T. vivax is a unicellular flagellated protozoan parasite, belonging to the family *Trypanosomatidae*, genus *Trypanosoma*, section *Salivaria*. The parasite is morphologically characterized by a bloodstream trypomastigote stage with a terminal kinetoplast and well-developed undulating membrane (WOAH 2021b). Trypomastigotes can multiply in the hosts and be mechanically transmitted by biting flies.

3. Geographical Distribution

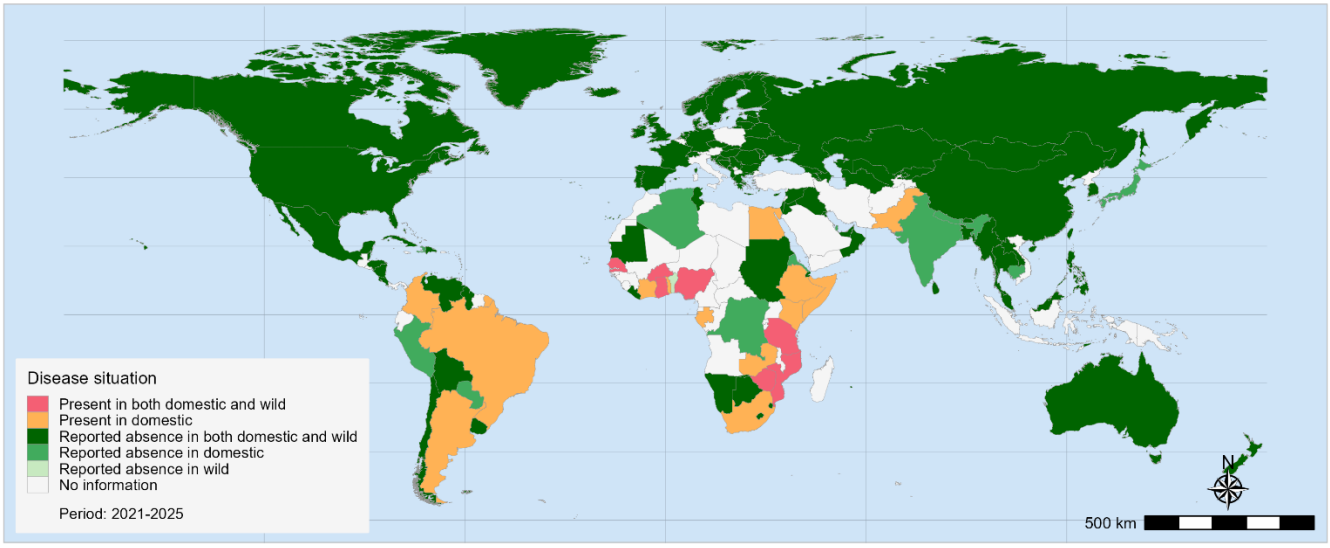


Figure 1. Geographical distribution of *Trypanosoma vivax* detected events (2021-2025), as reported to WOAH.

T. vivax has been reported in Africa, South America and Asia. This parasite has not been reported in Europe. Reported infections to WOAH for the period 2021 – 2025 are shown in Figure 1. In addition to those reports shown in this figure, epidemiological studies have reported the presence of *T. vivax* in Bolivia (Gonzales et al., 2007), Ecuador (Chávez-Larrea et al., 2024), Venezuela (Ramirez-Iglesias 2017), Peru and Guyana (Fetene et al., 2021). Up to date maps based on WAHIS and references are available in the online version of the Disease Profile (accessible via the button in the top right corner).

4. Animal hosts

4.1. Susceptible hosts

Based on epidemiological knowledge of host–pathogen–vector interactions and outbreak reports, the main hosts of *T. vivax* are domestic ruminants, equids and camelids. However, other susceptible species have been identified by the EFSA's systematic literature review (SLR), with the summary provided in Table 1.

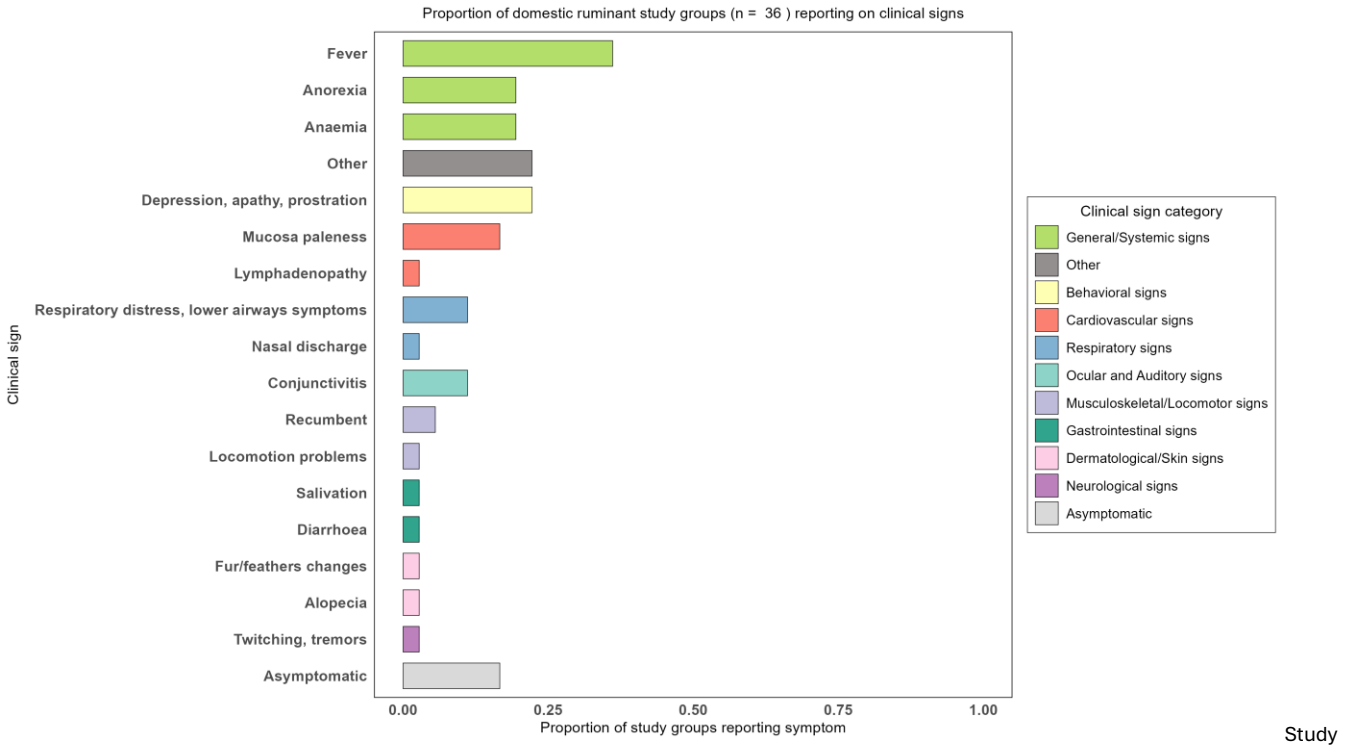
Table 1. Susceptible host species of *Trypanosoma vivax*.

The systematic literature review reported in the *T. vivax* disease profile, identified the following susceptible species (updated until 31/12/2025, for references see online disease profile)
FIELD
Epidemiological studies carried out in the field **Pathogen was detected in the following animal species:** • Bovidae: *Bos taurus, Capra hircus, Ovis aries, Bubalus bubalis* • Camelidae: *Camelus bactrianus* • Equidae: *Equus caballus* • Suidae: *Sus scrofa domesticus* **Antibodies were detected in the following animal species:** • Bovidae: *Bos taurus* • Equidae: *Equus caballus* **Outbreaks reported to WOAH included the following species:** • Equidae: *Equus quagga*
EXPERIMENTS
Experimental studies demonstrated infection in: • Bovidae: *Bos taurus, Capra hircus, Ovis aries, Bubalus bubalis* • Equidae: *Equus caballus*

4.2. Clinical Signs

Outcomes of a systematic literature review of clinical signs in 36 study groups of domestic ruminants are displayed in Figure 2. Predominantly, general clinical signs were reported.

Following infection animals, particularly cattle, goat and sheep, develop fever which is followed by anaemia, anorexia and prostration. Mucosal paleness, conjunctivitis and locomotion problems can also be observed. Decreased milk production and associations with abortions have also been reported for cattle, sheep and goat (Riet-Correa et al 2025, Batista et al 2009; Galiza et al 2011). Diseased animals can show clinical sings for extended periods ranging from weeks to several months in these three ruminant species (Cadioli et al 2012; and references available in the online disease profile).



Study group count per domestic ruminant species: Cattle n = 16; Goat n = 9; Sheep n = 8; Buffalo n = 3. Equid study groups not visualised due to small sample size (Horse n = 2). The SLR was updated until 31/12/2025, for references see the online disease profile.

Figure 2. Clinical signs reported in the main hosts of *T. vivax*.

4.2.1. Incubation Period

The incubation period, experimentally measured in cattle, goat and sheep can take from 2 to 7 days. The SLR identified experimental studies in buffalo, cattle, goat, horses and sheep (all references are available in the online disease profile).

4.2.2. Morbidity and case fatality

Outbreak investigations have reported morbidities in cattle following mechanical transmission by hematophagous flies ranging from 3.6 to 80% with a median morbidity around 22.8%. Reported mortalities in these outbreaks (estimated as the observed mortality out of the total population) ranged from 2.1% to 10.6% (Riet-Correa et al 2025).

In experimental studies median fatality rates of 16.7% (interquartile ranges of 8.3 – 37.5) in cattle, 25% (7 - 100) in goats and 13.3% (10.0 – 16.7) in sheep have been reported (all references are available in the online disease profile).

4.2.3. Zoonotic Potential

T. vivax is not known to infect humans under natural conditions.

5. Transmission

T. vivax is transmitted biologically or mechanically by hematophagous vectors of the order Diptera. In Sub-Sahara Africa and some regions of the Arabian Peninsula, *T. vivax* is mainly transmitted biologically by tsetse flies (*Glossinidae*). Other biting flies transmit *T. vivax* mechanically. For more information on vector distribution, visit the Vector section in the online disease profile.

For the mechanical transmission, following feeding from an infected host, the parasites survive for a few hours in the mouthparts of these biting flies, therefore, transmission takes place only when the mechanical vectors feed on new susceptible hosts within a short period of time. Iatrogenic transmission has been also associated with mechanical spread of *T. vivax* (Riet-Correa et al 2025).

6. Diagnostic tests

WOAH recommended tests (WOAH,2025) for detection of the parasite are based on parasitological techniques involving direct microscopic examination of wet or dry-stained thick or thin blood films and the buffy-coat/microhaematocrit centrifugation technique (HCT). These tests have limited sensitivity around 52%, which depends on the time from sample collection to diagnostic testing, with highest sensitivity reached when testing fresh blood samples. Specificity of these tests is in general high, but tests such the HCT do not allow specific identification of the Trypanosoma species in areas where multiple species circulate (Masake et al 1997).

Detection of DNA by PCR is the method with the highest specificity (close to 100%) and sensitivity (>90%), particularly when using whole blood samples (Gonzales et al 2006; Masake et al 1997).

Serological methods such as ELISA and Immunofluorescence assay (IFA) are also recommended by WOAH. These tests have overall moderate to high sensitivity (65 – 89%) and ppecificity (>80%).

Table 2 presents data on the sensitivity and specificity of diagnostic tests collected through EFSA's systematic literature review; reported values correspond to the median sensitivity and specificity when multiple study groups investigated the same test and are only included when explicitly stated in the publications.

Table 1. Median sensitivity and specificity of tests to detect AHSV/AHSV antibodies reported in literature included in the systematic literature review.

Target	Test	Species	Sensitivity	N animal groups	Specificity	N animal groups	References
Antigen	ELISA	Cattle	28.55%	6	-	-	Eisler et al. 1998
Antigen	LFIA	Cattle	86%	1	32.5%	1	Richard Gashururu et al. 2021
Nucleic Acid	PCR	Cattle	75.15%	2	100%	2	de Melo-Junior et al. 2024
Nucleic Acid	RT-PCR	Cattle	93.42%	1	82.43%	1	Contreras-García et al. 2022
Parasite	Blood smear	Cattle	10%	1	94%	1	Takeet et al. 2013
Parasite	Thin blood smear	Cattle	28.9%	1	99.1%	1	Richard Gashururu et al. 2021
Parasite	Wet blood smear	Cattle	38%	2	100%	2	de Melo-Junior et al. 2024
Parasite	Buddy coat	Cattle	15.6%	3	-	-	Pillay et al. 2013
Parasite	Microhaematocrit centrifugation technique (mHCT)	Cattle	40%	3	100%	3	Richard Gashururu et al. 2021; de Melo-Junior et al. 2024

Antibody	ELISA	Cattle	82.35%	5	92.3%	5	Pinheiro et al. 2021; de Melo-Junior et al. 2024; Madruga et al. 2006
Antibody	IgG ELISA	Cattle	85.3%	2	82.6%	2	Pinheiro et al. 2021
Antibody	ELISA (indirect)	Cattle	62.1%	12	90.2%	4	Bontempi et al. 2024; Pillay et al. 2013; Magona et al. 2002
Antibody	IFAT	Cattle	66.6%	2	90%	2	de Melo-Junior et al. 2024
Antibody	LFIA	Cattle	69.6%	2	90%	2	de Melo-Junior et al. 2024

7. Prevention and control

7.1. Vaccination

There are no vaccines available

7.2. Treatment

Trypanocidal drugs diminazene diaceturate (DA), isometamidium chloride (IC), Imidocarb dipropionate (ID) and Ascofuranone (antibiotic) are used for treatment. High therapeutic efficacy (close to 100%) under experimental conditions have been reported for DA, IC and Ascofuranone, whilst lower efficacy (66.9%) was reported for ID. (Bastos et al, 2020; Saganuma et al 2024).

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