

CODE OF PRACTICE FOR DOURINE

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The Disease

Dourine, also known as *maladie du coit* or genital glanders, is caused by the protozoan parasite, *Trypanosoma equiperdum* and is a serious, often chronic, venereally transmitted disease of horses and other equids. Once widespread, dourine has been eradicated from many countries but is still seen in horses in Asia, Africa, South America, southern and eastern Europe, Mexico and Russia. It was reported in June 2011 in Sicily and then just north of Naples, on the Italian mainland. There was evidence based on subsequent testing of blood samples collected in 2010 of subclinical seropositivity to dourine in many regions of Italy. There is currently no proven long term cure for dourine and so euthanasia is considered the best policy, on grounds of equine health, welfare, and disease control.

Notification Procedures

In Great Britain (England, Scotland and Wales), dourine is **notifiable by law** under the Infectious Diseases of Horses Order 1987. Under the Order, anyone who owns, manages, inspects or examines a horse, which is affected or is suspected of being affected by the disease must notify the Animal & Plant Health Agency (APHA). Please see Appendix 1 for APHA contact details. Under the Order, the premises where disease is suspected may be declared to be an infected place and restrictions imposed on horses at those premises. A veterinary enquiry will be carried out by the APHA to determine if dourine is present. The Order also provides Defra with powers to enforce measures for vector control and disinfection.

Clinical Signs

Clinical signs of dourine are highly variable in manifestation and severity. The disease is characterised mainly by swelling of the genitalia, cutaneous plaques and neurological signs but severity varies with the virulence of the strain, the nutritional status of the horse and stress factors. Clinical signs often develop over weeks or months, frequently waxing and waning with relapses, probably precipitated by stress. This can occur several times before the animal either dies or experiences an apparent recovery. The mortality rate is believed to be in excess of 50%.

Genital oedema and reproductive tract mucopurulent discharges are often the first signs. Mares develop a mucopurulent vaginal discharge, and the vulva becomes oedematous; this swelling may be marked leading to vaginal prolapse and may extend along the perineum to the ventral abdomen and mammary gland and may result in depigmentation, similar to that seen in coital exanthema with EHV-3 infection. Abortion can occur with more virulent strains. Stallions develop oedema of the prepuce and glans penis with paraphimosis in some cases, and can develop a mucopurulent urethral discharge. The swelling may spread to the scrotum, perineum, ventral abdomen and thorax and the affected skin may become depigmented.

Characteristic raised oedematous patches 2-10 cm in diameter (sometimes called 'silver dollar plaques') may appear on the skin on the neck, hips, lower parts of the abdomen and particularly over the ribs. These cutaneous plaques usually last for 3 to 7 days and are pathognomonic for the disease, although they do not occur with all infecting strains.

Neurological signs can develop with signs of progressive weakness, incoordination and, eventually, paralysis. Facial paralysis, which is generally unilateral, may be seen in some cases. Conjunctivitis and keratitis are common, and in some outbreaks, ocular disease may be the first sign of dourine and anaemia and intermittent fever may also be found. Dourine also results in a progressive loss of condition and affected animals may become emaciated, although their appetite remains good.



Transmission of Disease

Dourine is caused by the protozoan parasite, *Trypanosoma equiperdum*, which unlike other trypanosomal infections, is sexually transmitted during natural mating or by artificial insemination (AI) with infected semen. Transmission from stallions to mares is more common, but mares can also transmit the disease to stallions. *T. equiperdum* can be found in the vaginal secretions of infected mares and the seminal fluid, mucous exudate of the penis, and sheath of stallions. Periodically, the parasites disappear from the genital tract and the animal becomes non-infectious for weeks to months. Transmission is most likely early in the disease process as non-infectious periods are more common late in the disease. Male (jack) donkeys can become asymptomatic carriers and sexually immature jacks that become infected can transmit the organism when they mature.

Rarely, infected mares pass the infection to their foals, possibly before birth or through colostrum and milk, and infections may also be acquired through mucous membranes such as the conjunctivae. There is currently no evidence that arthropod vectors play a significant role in transmission of dourine, but this possibility cannot be ruled out.

Prevention

There is no vaccine available for dourine. As dourine is primarily a venereal disease, prevention of natural mating or AI with infected horses (stallions or mares) or infected stallion semen is the most important means of control. Prevention of dourine is therefore based on the establishment of freedom from infection and this is done by testing blood for the presence of antibodies against *T. equiperdum*, which is more reliable than testing for the presence of the protozoan parasite itself.

Any introductions of horses from endemic areas or areas of incursion should be isolated and blood tested for antibodies by complement fixation test (CFT). Horses in isolation must not be allowed to mate and semen must not be collected or used for AI until negative dourine test results are confirmed. Any seropositive results, or any horses showing clinical signs of dourine should be reported as required by national law (APHA in GB) and will then be dealt with under official supervision. Dourine should be eradicated from an incursion into a non-endemic area by identification of the source, thorough tracing and testing of all in-contacts and euthanasia of infected and seropositive horses.

Stallions or mares should not leave endemic areas or areas of incursion without veterinary confirmation that:

- The horse(s) has/have not been in contact with cases of dourine.
- The horse(s) is/are healthy and show(s) no clinical signs of dourine, prior to leaving.
- Negative CFT blood sample result(s) for dourine, performed by an authorised laboratory, collected within one month of leaving, are certified.

On arrival in an area where dourine does not occur, these stallion(s) or mare(s) should be isolated until repeat negative CFT blood sample result(s) for dourine, performed by an authorised laboratory, collected 10-14 days after arrival, has been obtained. Under no circumstances should the stallion(s) or mare(s) involved be mated and no semen should be collected and used for AI purposes before this reassurance has been obtained.

Diagnosis

Due to the variability and possible absence of outward signs of dourine, clinical diagnosis is not always possible and laboratory diagnosis is necessary to confirm diagnoses of dourine.

The complement fixation test (CFT) is the prescribed test for international trade, and has been used successfully in eradication programs. Some uninfected animals, particularly donkeys, often have non-specific CFT reactions due to anticomplementary activity of their serum, thereby rendering results difficult to interpret. Indirect fluorescent antibody tests (IFAT) may help to resolve these cases. Enzyme linked immunosorbent assays (ELISAs) and agar gel

immunodiffusion (AGID) tests have also been used to diagnose dourine. Although no serological test is specific for dourine as cross-reactions occur with other trypanosomes (especially *T. brucei* and *T. evansi*), this is not a problem where these infections are all considered to be exotic and requiring eradication.

CFT should always be used to test horses with clinical signs, to test horses that have been in contact with others who have or are at risk of having dourine and for official export certification. In such cases, samples for dourine (CFT) blood testing must be sent to the APHA Weybridge (tel: 01932 357335).

Definitive diagnosis by identification of the parasite is not undertaken for routine screening as the organisms are extremely difficult to find and are usually not detectable in blood smears. *T. equiperdum* cannot be distinguished microscopically from *T. evansi*.

Control of infection

If dourine is suspected in any horse, stop all breeding activities immediately, identify the horse(s) concerned, notify the APHA and seek veterinary advice about the welfare of the horses and the next steps.

If dourine is confirmed, further action will be controlled by Defra. Mating, teasing, collection/insemination of semen and movement of horses on and off the premises must stop until the disease outbreak is confirmed to be over. The premises concerned will be subject to official movement restrictions.

Any venereal contacts with confirmed infected horses must be isolated and will be blood tested to determine if they produce antibodies, i.e. to determine if they have become infected.

Inform:

- Owners (or persons authorised to act on their behalf) of horses at, and due to arrive at, the premises.
- Owners (or persons authorised to act on their behalf) of horses that have left the premises.
- Recipients of semen from the premises.
- The national breeders' association.

T. equiperdum is a parasite, which cannot survive outside a living host. It dies quickly with its host. Various disinfectants, including 1% sodium hypochlorite, 2% glutaraldehyde and formaldehyde, as well as heat of 50-60°C, will kill the parasites in the environment, but their transient life outside the host makes this unnecessary, although good stable hygiene is always recommended.

Treatment

There is currently no effective treatment for dourine, although treatment has been attempted with quinapyramine sulphate (3 mg/kg, given subcutaneously). However, *T. equiperdum* may persist in an asymptomatic carrier form after treatment and apparently recovered treated horses are considered unsafe for breeding purposes.

Confirmation of Freedom from Disease

Restrictions on the affected premises and/or the horses in it may only be lifted, and any breeding activities resumed, after authorisation by the local Field Service office of the Animal & Plant Health Agency (APHA) and approval by the attending veterinary surgeon, who must be satisfied that all in-contact horses have been investigated and found to be negative for dourine.

Note: If statutory restrictions have been imposed, the requirements of the supervising APHA officials must be met in order that the restrictions can be lifted.

Export Certification

For official export certification purposes, samples for dourine (CFT) blood testing must be sent to the APHA Weybridge (tel: 01932 357335).

Further information for veterinary surgeons

<https://www.oie.int/app/uploads/2021/03/dourine.pdf>