

# Herdsure<sup>®</sup> protocol for leptospirosis in cattle herds



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## Introduction

This protocol describes the processes used to establish the disease status for leptospirosis caused by *Leptospira* Hardjo (*L. Hardjo*) in cattle and for control and subsequent monitoring.

The protocol is suitable for both dairy and beef herds.

*L. Hardjo* is the cause of a significant disease of cattle resulting in loss of milk yield/milk drop, infertility and abortion. It is also a potentially important infection of humans.

The three main elements of this Herdsure<sup>®</sup> protocol for leptospirosis are:

- sampling and testing to determine status
- sampling and testing to identify infected cattle so that they can be removed from the herd.
- advice on appropriate measures to reduce the risk of re-introducing *L. Hardjo* infection, together with sampling and testing to monitor the improved *L. Hardjo* status of the herd.

The leptospirosis protocol comprises three levels of 'health status':

<b>Level 1</b>	Establishes the leptospirosis status of the herd.
<b>Level 2</b>	Aims to improve the health status of the herd for leptospirosis.
<b>Level 3</b>	Monitors and aims to maintain the improved (or established as satisfactory at Level 1) health status of the herd for leptospirosis.

Please also refer to the flowchart summary of the protocol presented at the end of Level 3.

## The disease

### Introduction

Although it has recently been shown that *L. Hardjo* comprises two distinct species, it is not clear which of these predominates in Great Britain since current tests are insufficiently sensitive to distinguish between the two. However, they both cause similar disease in cattle and the means to control them are essentially the same. Hence, for the purposes of this handbook, both will be referred to generically as *L. Hardjo*.

Leptospirosis in cattle causes infertility, milk drop, abortion and the birth of weak and unviable calves.

The disease can also be transmitted from infected animals to people. Human infection is usually characterised by a 'flu-like' illness, although in rare cases the disease can be more severe or even fatal.

### Routes of infection

Exposure to urine from infected animals is the main route by which *L. Hardjo* is transmitted between cattle. However, venereal transmission is also possible since the organism can be excreted in semen and uterine discharges; aborted fetuses, foetal membranes and the discharges associated with abortion are also potentially infectious. Infected animals can excrete the organism for long periods (from months to years) and some may continue to excrete even after antibodies to infection can no longer be detected in blood samples.

### The role of sheep

Sheep may act as carriers without showing any clinical signs and have been identified as a potential source of infection for cattle.

### Clinical signs associated with *L. Hardjo* infection

In cattle, the following syndromes are associated with *L. Hardjo* infection.

- **Abortion.** This usually occurs in the second half of pregnancy. *L. Hardjo* infection in late gestation may also result in the birth of weak or unviable calves. When infection is endemic in a herd, the only sign of disease may be abortion in newly introduced heifers that have no immunity.
- **Milk drop.** This may affect a large proportion of the herd simultaneously. Some affected cows have a raised temperature; some may show a 'flabby' udder affecting all four quarters. There can be an associated high milk somatic cell count. The classical acute milk drop syndrome is now uncommon in Great Britain. However, in infected herds, there may be reduced herd milk yield due to sub-clinical infection in some cows.
- **Infertility.** Infertility can be significant in the first year following introduction of infection into a susceptible herd. It is characterised by low conception rate to first service, increased calving to first service interval and increased number of services for each successful pregnancy. Infertility may also affect heifers in infected herds that stop vaccinating.

## Detecting infected cattle

When cattle are infected with *L. Hardjo*, antibody is produced. This antibody can be detected in blood and milk samples. The ELISA test measures a type of antibody that, although not detectable until 3 or 4 weeks after infection, persists for 2 or 3 years after infection. It is for this reason that this test is preferred.

## Control of leptospirosis

The removal of all antibody-positive cattle and the prevention of new infection entering the herd is the ideal means of control of leptospirosis. This will not be practical for many herds with significant numbers of antibody-positive cattle.

Vaccinating all the animals in the herd is the main control measure for active leptospirosis infection in cattle. Owing to the risk of human infection, vaccination of the entire herd should be seriously considered if active infection is demonstrated. Your veterinary practitioner will be able to alert you to the presence of active infection by regularly reviewing antibody results for cattle in your herd and by investigating the occurrence of the clinical signs described above in cattle on your farm.

Vaccination of infected cattle does not prevent them excreting *L. Hardjo*.

Since antibody produced by vaccination cannot be distinguished from that resulting from 'natural' exposure to *L. Hardjo*, it is not possible to demonstrate that vaccinated cattle are free from infection.

## Biosecurity

It is the responsibility of the herd manager, in consultation with their veterinary practitioner, to ensure good biosecurity in herds subscribed to the Herdsure® service.

The following potential means of introducing leptospirosis into herds should be addressed and the risk kept to a minimum.

- **movement of people, vehicles or equipment** into areas where the cattle are kept (including fields, farm buildings and other holding areas) should be kept to a minimum.
- **people entering premises** to handle the cattle (or their products) should wear clean protective clothing and footwear. Alternatively, disposable protective clothing can be used. Other visitors to the farm should be kept away from direct contact with the cattle.
- **shared farm equipment:** Equipment, machinery, livestock trailers and handling facilities that are used on herds of unknown leptospirosis status must be cleaned and disinfected before they are used with herds subscribed to Levels 2 and 3 of the Herdsure® leptospirosis protocol.
- **other vehicles** entering the farm should not come into contact with the areas used by cattle unless they have been thoroughly cleaned and disinfected.
- **delivery and pick-up points** should be at a site isolated from other cattle on the farm. Drivers should remain in their cabs and should not assist in removing cattle from pens unless they are using farm-dedicated protective clothing and footwear.

- **veterinary surgical instruments** must be sterilised before they are used on animals in the herd. Equipment such as drenching guns must not be shared with cattle from other herds.
- **farm boundaries** must prevent cattle from straying off or onto the farm and must prevent nose-to-nose contact with cattle of a lower or unknown health status.
- **contact with cattle of different health status:** Cattle herds subscribed to Levels 2 and 3 of the Herdsure<sup>®</sup> leptospirosis protocol must not come into contact with cattle from herds which are not of an equal or higher Herdsure<sup>®</sup> leptospirosis status, otherwise they will lose their status. To re-introduce them to the herd, they must be regarded as added animals (see the requirements for buying in animals explained below).
- **isolation facilities:** An isolation facility that prevents contact with other stock must be provided for all added animals. A dedicated building separate from other cattle buildings is required, although a separate paddock that prevents contact with other livestock may suffice. The drainage or dung storage area should not be shared with other cattle. Dung should be spread on land or added to the main dung store only when all cattle in the isolation facility have passed all the required tests. Where cattle are confirmed as positive, dung must not be disposed of onto pasture that is to be grazed by cattle for a period of 12 months.
- **co-grazing with sheep or other domestic ruminants or camelids:** Although not a mandatory requirement, it is strongly recommended that, wherever possible, cattle and sheep do not graze together. It is also recommended that cattle do not co-graze with other domestic ruminants and camelids.
- **CHeCS accreditation:** there must be a 2 month interval before accredited cattle follow non-accredited cattle, sheep or other potentially infected animals (other domestic ruminants or camelids) onto pasture. The same grazing restrictions apply to accredited cattle if slurry or manure collected from non-accredited cattle has been used on the pasture.
- **water:** Piped mains water should be used rather than natural water sources whenever possible. Water sources which arise from neighbouring land grazed by cattle or sheep could be contaminated by infected urine and therefore should be avoided.
- **Notification:** Herd owners and managers who are participating in Herdsure<sup>®</sup> must inform their veterinary practitioner of any changes that could affect herd biosecurity.

## Keeping track of your herd's progress in Herdsure<sup>®</sup>

An **annual herd progress report** will be issued to Herdsure<sup>®</sup> members. The progress report will detail the level achieved for each protocol for which the herd is enrolled on the date of issue.

For a small fee, an updated progress report can be produced. The updated progress report, like the annual report, will detail the level achieved for each protocol for which the herd is enrolled on the date of issue.

## **Adding cattle – avoiding buying in disease**

Added cattle are one of the most likely ways to introduce leptospirosis into a herd. Minimising the number of cattle bought in to the herd from other sources reduces the risk of introducing infection.

The Herdsure<sup>®</sup> service recommends that all added animals are isolated and tested before joining the herd. Testing and isolation of added animals is mandatory for herds seeking CHeCS accreditation. The only exception to this is where animals are sourced from CHeCS disease-free certificated herds. Refer to the CHeCS technical document for the rules that apply.

It is wise to establish the leptospirosis history of the herd of origin of cattle intended for purchase in order to avoid buying cattle from a herd with leptospirosis infection.

It is preferable to test cattle intended to be introduced into the herd while they are still with the herd of origin so that antibody-positive animals may be identified and rejected.

Cattle can be introduced into a herd but they will be subject to isolation and testing before they join the remainder of the herd. Such cattle must be isolated for 28 days. At the end of this period, antibody testing will be carried out. These cattle can only enter the herd when both the isolation period and the testing have been completed with negative results.

Very occasionally, cattle may have negative antibody results but may still be infected. Therefore, all bought-in cattle that are 12 months of age or over must also be tested for antibody 12 months after they join the herd.

### ***Action if cattle have a positive result while in isolation***

- cattle testing positive should be removed from the holding without delay. If animals are bought in batches and one or more test positive the remaining animals should only be permitted to enter the herd after an additional 28 days in isolation and negative blood test.
- bedding and waste from the isolation facility must not be disposed of onto pasture that will be grazed by cattle within 12 months.
- isolation facilities should be thoroughly cleaned and disinfected.

## **Establishment of a new herd from accredited stock**

Where it is intended to establish a leptospirosis-free accredited herd by acquiring cattle accredited free of leptospirosis, the premises must be inspected by the veterinary practitioner before the new stock is introduced in order to ascertain that the biosecurity of the premises and farm boundaries meet the requirements of CHeCS. Accreditation testing for leptospirosis must be carried out no sooner than three months after establishing the herd. Once testing has been completed, with satisfactory results, the herd can be recognised as having achieved accredited status.

## **Shows and sales**

Contact with other stock puts the status of the herd at risk. CHeCS-accredited cattle attending CHeCS-accredited sections may return to their herds of origin without isolation and testing. All other cattle will lose their Herdsure<sup>®</sup> health status. Consequently, on returning to their herd of origin, they will be subject to the testing and isolation requirements described above. For CHeCS-accredited herds, animals moving off the owner's holding for preparation for sale will lose accredited status if the CHeCS biosecurity rules are not adhered to on the premises where preparation is taking place.



## The protocol

### Level 1

#### Objective of Herdsure® testing

- Level 1 testing aims to establish whether or not there is evidence of *L. Hardjo* infection in a herd.
- Level 1 also uses any herd history and relevant test results already held by the veterinary practitioner or by AHVLA.
- where the history and test results indicate clear evidence of *L. Hardjo* in the herd in the past 12 months, herds should start the Herdsure® leptospirosis protocol testing at Level 2.

#### Sampling

For Level 1, the following samples will be taken:

- *milking cows*: This is done by taking a bulk milk sample.
- *suckler cows*: This is done by blood sampling a proportion of the group.
- *replacement youngstock that are more than 1 year of age*: As for suckler cows, this is done by blood sampling a proportion of each management group. Your veterinary practitioner will advise you which cattle are classed as separate groups.
- *all breeding bulls*: One blood sample from each is required.

## Level 2

### Objective of Herdsure® testing

- Level 2 testing aims to improve the health status of the herd for leptospirosis by reducing the detrimental influence of *L. Hardjo* infection in the herd. This is done by identifying the cattle that are responsible for the maintenance of the infection. Once identified, these cattle may be removed or they may be retained and a disease-reduction strategy applied.

Once the *L. Hardjo* status of a herd is known, two options may be considered:

- **Level 2a** to test all the eligible cattle and remove all ELISA-positive cattle from the herd.
- **Level 2b** to monitor the immunity of the herd.

### Sampling

The number of cattle sampled for the milking cow herd, the suckler cow herd and for each management group of youngstock depends on the size of the group. Your veterinary practitioner has been provided with a table to calculate this. Breeding bulls are sampled individually. Your veterinary practitioner will also be able to tell you the criteria for deciding whether or not particular groups of cattle should be considered as separate management groups or not.

#### Level 2a – test and remove positives

Successful completion of Level 2a requires blood sampling of all the dairy cows (both dry and milking) and all the suckler cows, cattle over 1 year old intended for introduction into the milking or suckler herds and all the breeding bulls.

All the cattle giving positive antibody test results should be removed from the herd.

The herd can only move to Level 3 when all the required animals have been tested without revealing positive results on two successive occasions no less than 6 months and no more than 12 months apart.

#### Level 2b – continued monitoring

The following samples are required:

- *dairy-only herds*: Bulk milk samples collected every 3 months for antibody testing.
- *beef-only herds*: This is done by blood sampling a proportion of the suckler cow herd.
- *herds with both dairy and suckler cows*: Bulk milk samples collected every 3 months for antibody testing together with blood sampling of a proportion of the suckler cow herd and each management group containing youngstock between 8 and 11 months of age. All bulls must also be sampled.

Unless a vaccination policy is being applied to the herd, there should be a reduction over time in the milk antibody level and/or the number of animals with positive antibody results. Indeed the herd may eventually become serologically negative. At any stage you may wish to consider moving the herd to Level 2a.

If there is an increase in milk antibody or an increase in the number of animals showing positive antibody results, this may indicate the introduction of active infection. As L. Hardjo can cause severe illness in humans, the introduction of infection or evidence of active infection is of serious concern. In these instances your veterinary practitioner will be able to advise you on an appropriate course of action. If the herd in question is unvaccinated, vaccination may be considered.

## Level 3

### Objective of Herdsure® testing

- Level 3 testing aims to monitor and maintain the improved leptospirosis health status of the herd. The sampling and testing is designed to provide assurance that leptospirosis is not present in the herd and to alert the veterinary practitioner if *L. Hardjo* is re-introduced into the herd.

During Level 3, the same procedures as described for Level 1 are used to monitor the now antibody-negative herd for the appearance of positive antibody results that would indicate the introduction of infection into the herd.

### Sampling

The bulk milk ELISA testing begins 3 months after a herd enters Level 3 and continues at 3-monthly intervals. Blood sampling of a proportion of the suckler cow herd and of each separate management group of youngstock over 12 months of age along with individual sampling of bulls begins 1 year after the herd enters Level 3 and continues annually thereafter.

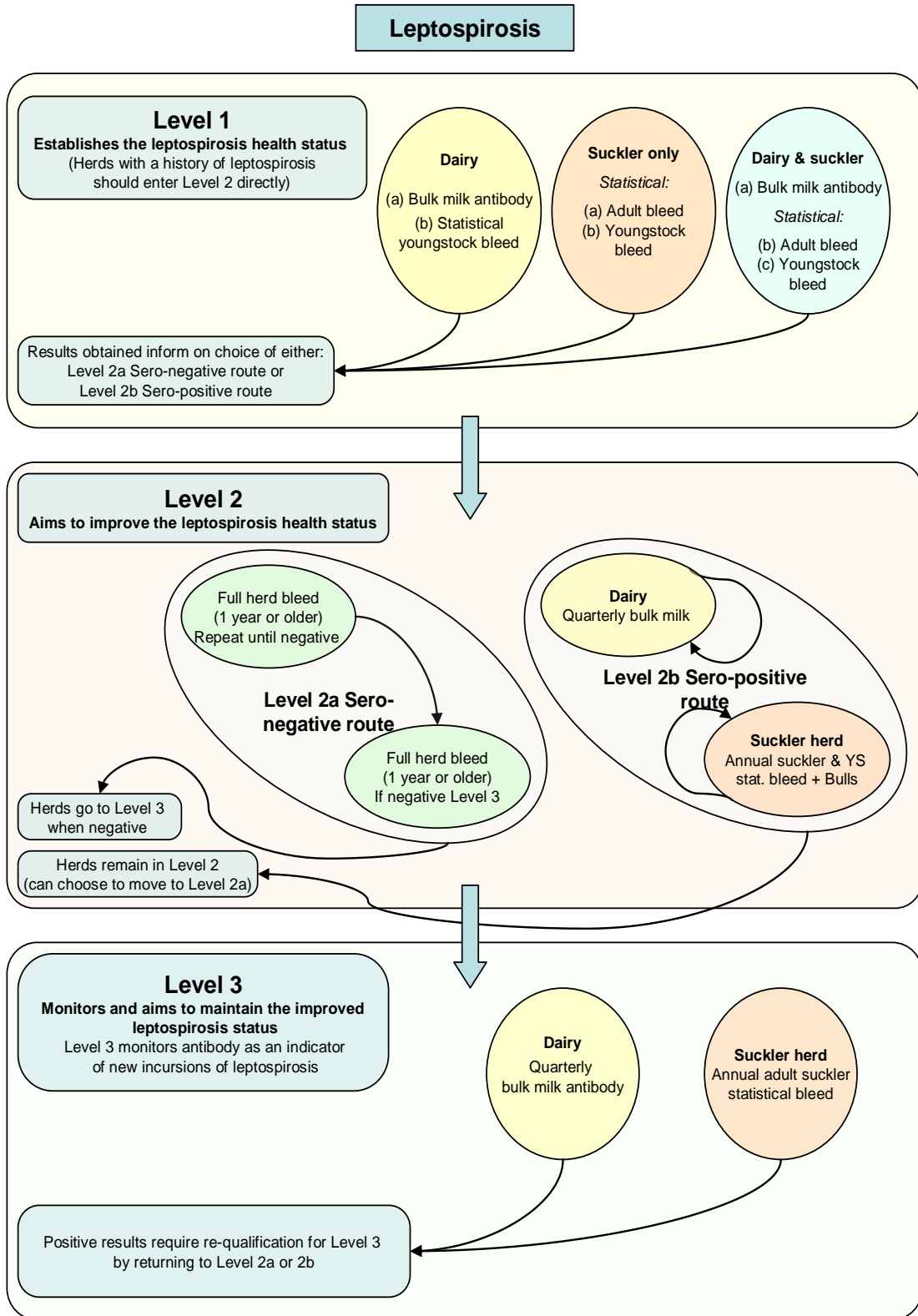
Where any of the Level 3 tests show positive antibody results, the herd will revert to Level 2.

### Investigation of clinical disease

Any episodes of clinical disease thought to be associated with *L. Hardjo* infection in a herd subscribed to any level of the Herdsure® protocol for leptospirosis should be reported to your veterinary practitioner who will arrange collection of appropriate samples for diagnostic purposes.

### CHeCS accreditation

The Level 2a route is required for CHeCS accreditation. Herds are eligible for CHeCS accreditation at Level 3 following 2 consecutive clear herd tests at Level 2a. More information is available on the CHeCS website ([www.cheecs.co.uk](http://www.cheecs.co.uk)).



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