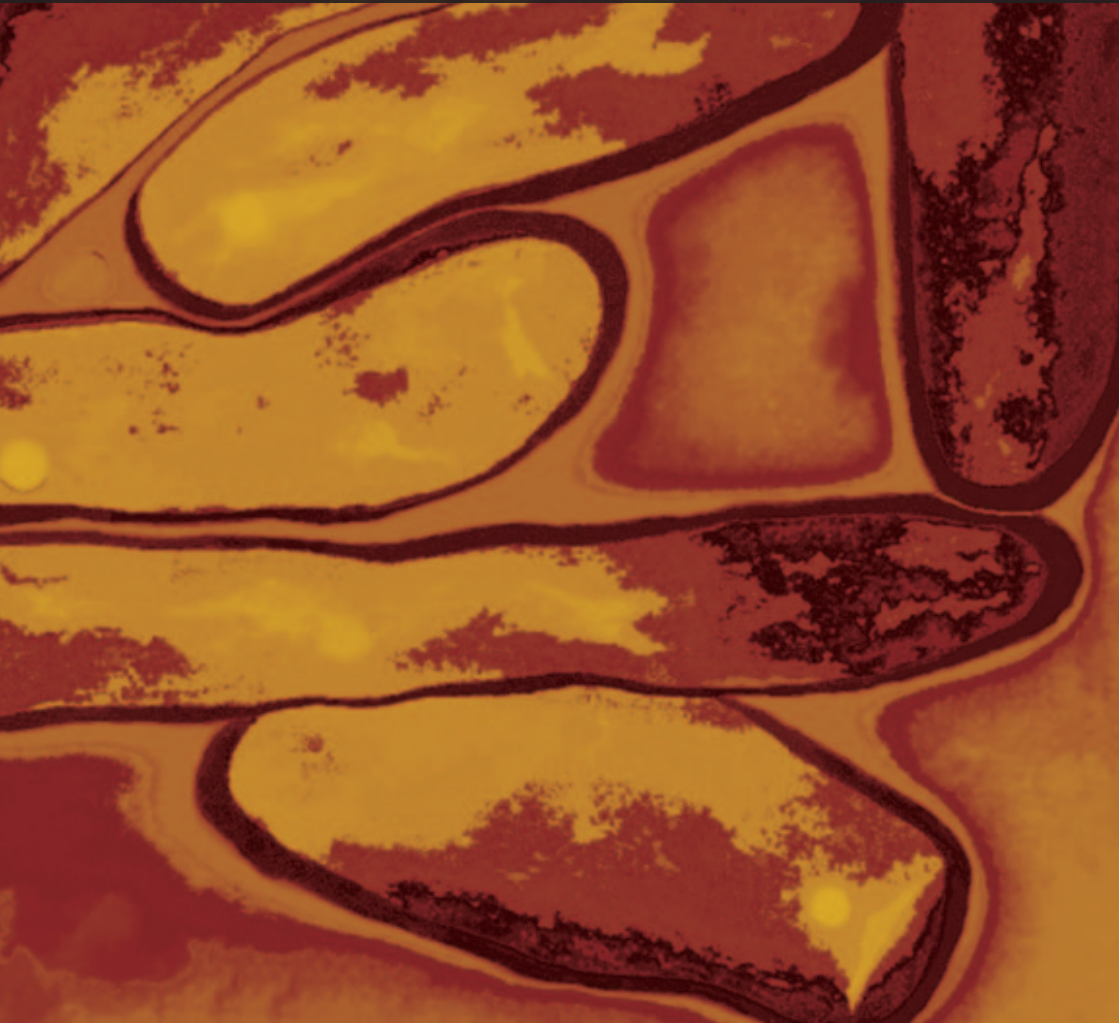


DEALING WITH TB IN YOUR HERD

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Bovine tuberculosis (TB):
What is it? Why do we test for it? How do we detect it?





Bovine TB is one of the most complex animal health problems currently facing the farming industry in Great Britain. This advice and guidance leaflet is an introduction to bovine tuberculosis (TB): what is it, why do we test for it and how do we detect it?

What is bovine TB?

Bovine TB is a chronic, mainly respiratory, infectious disease of cattle. It is caused by the bacterium *Mycobacterium bovis* (*M. bovis*), which can also infect and cause TB in badgers, deer, goats, pigs and many other mammals, including people.

M. bovis and *M. tuberculosis* belong to a family of bacteria that cause, among other diseases, Jöhne's disease in cattle, deer, sheep and goats, avian TB in birds and leprosy in humans.

Where does bovine TB come from?

Bovine TB can spread to uninfected cattle in a number of ways, including through contact with:

- an infected domestic animal (usually cattle) brought onto a farm
- infected wild animals, especially badgers
- contaminated equipment, feedstuffs, slurry etc.

What are the risks to humans from bovine TB?

The vast majority of cases of TB in humans in Great Britain arise from infection with the human tubercle bacillus (*Mycobacterium tuberculosis*), which is closely related to *M. bovis* but is transmitted through close contact with infected people rather than cattle.

Why do we test cattle for bovine TB?

We test cattle to find those infected with bovine TB. This is done for three reasons.

To:

- prevent bovine TB spreading to other cattle or other animals
- make sure that cattle do not suffer because of TB
- protect public health.

Farmers are required by law to have their cattle tested for bovine TB with a relevant test by a specified date.

Zero tolerance

Since 2004, cattle owners have been advised by letter that their herds' testing is due and that they are obliged to arrange a bovine TB test, prior to the due date.

If a test is overdue, Animal Health will place movement restrictions (TB2 restrictions) on your herd/s.

How do we test for bovine TB?

The single intradermal comparative cervical tuberculin (SICCT) test, which is commonly known as the tuberculin skin test, is the primary bovine TB test used throughout Europe.

Since 2006, the Gamma Interferon test has been used alongside the skin test to identify animals at an earlier stage of infection.

The tuberculin skin test

The tuberculin skin test is the internationally-accepted standard for detection of infection with *M. bovis*, and is considered the best test currently available.

It is designed to test an aspect of the immune response called "cell-mediated immunity" and involves injecting a small amount of tuberculin



(a harmless protein extract of the bacterium) into the skin of the animal. In most cattle infected with *M. bovis*, this will cause the animal's immune system to react to the tuberculin and cause a localised allergic reaction (swelling) of the skin a few days after the injection.

Cattle are sometimes infected with other types of mycobacterium which may cause the animal to react to the test. In order to distinguish between animals infected with *M. bovis* and those infected by other mycobacterium, each animal is also injected with an extract from the organism that can cause TB in birds (avian TB). The size and nature of the reaction to both tuberculins ('avian' and 'bovine') is compared to determine whether the test result is considered positive, negative or inconclusive.

How is the test carried out?

Testing is carried out by government staff or by government-approved TB testers (official veterinarians) who are supervised by government-approved veterinarians. The six basic steps are:

- 1 The animal is identified (by its ear tag) and its identification recorded.
- 2 Two injection sites are selected in the middle third of the side of the neck, one above the other, separated by about 125mm.
- 3 Hair is clipped around the sites to a radius of about 20mm.
- 4 A fold of skin at both sites is measured with callipers and recorded.
- 5 Tuberculin is injected into the skin; the upper site is used for the avian tuberculin.



- 6 After 72 hours, the tester returns, confirms the animal's identity, measures the same fold of skin at both sites and records the thickness of the skin fold.

Interpreting the results of the skin test

Usually, 'standard interpretation' of the skin test results is applied.

If the reaction to bovine tuberculin is more than 4mm greater than the reaction to avian tuberculin, the animal is considered to be infected with bovine TB and is called a reactor.

Reactor animals are slaughtered and the internal organs commonly affected by TB are assessed by post-mortem examination.

If the reaction to the bovine tuberculin is between 1mm to 4mm greater than the

reaction to avian tuberculin, the animal is considered an inconclusive reactor (IR) and will be tested again after 60 days.

If, following the second test at 60 days, the animal is found to be either an IR or a reactor, then the animal is culled.

Reinterpreting the test results after confirmation of bovine TB

If evidence of bovine TB can be found in a reactor animal by post-mortem examination and /or laboratory culture of tissues, then the TB breakdown is classed as a confirmed breakdown. Following this, the results for other cattle from the same herd will be re-assessed using severe interpretation.

Severe interpretation

This involves lowering the cut-off for animals to be classed as reactors to enhance the sensitivity of the test. Once TB is confirmed by either post-mortem examination or tissue culture, the previous skin test results may be re-assessed using severe interpretation. As a result, further animals may be classed as reactors or IRs.

Severe interpretation is also used in the follow-up tests carried out at 60-day intervals before TB restrictions can be lifted from cattle herds where TB has been confirmed.

The Gamma Interferon blood test

The Gamma Interferon test is used in many countries, in combination with the skin test, to improve the detection of infected cattle in herds with persistent bovine TB problems or with a high prevalence of disease.

The test is less specific than the comparative tuberculin skin test and it cannot be used in place of the skin test for mass screening of cattle.

However, the Gamma Interferon test has good sensitivity and appears to detect infected animals earlier than the skin test:

- the tuberculin skin test is the best screening test for bovine TB. European legislation stipulates that the skin test is the primary ante-mortem test for TB in cattle in the EU
- the Gamma Interferon test is put to best use alongside the skin test in herds of high disease prevalence to help identify and remove infected cattle at an earlier stage.

Circumstances under which the Gamma Interferon test is used

The use of the Gamma Interferon test is now mandatory to enhance sensitivity and detection of infected cattle, in the following prescribed circumstances:

- all confirmed new bovine TB incidents in three or four-yearly tested herds, including those that fail to resolve through repeated skin tests or where complete or partial de-population is contemplated
- confirmed incidents that have failed to resolve through repeated skin testing in one and two-yearly tested herds, including those herds where a complete or partial de-population is contemplated
- in **Wales**, in areas where disease does not appear to be endemic in wildlife.

Additionally, the test is used occasionally in the following limited circumstances:

- non-specific reactor procedure for unconfirmed breakdowns in two, three or four-yearly tested herds
- suspected fraudulent reactors
- in **Wales**, to clarify the status of animals identified as two times severe interpretation IRs. Two times standard interpretation IRs are removed as reactors.

Further information

Contact your local Animal Health office for further practical advice and guidance or visit the Animal Health website:

www.defra.gov.uk/animalhealth

Since devolution, the responsibility and powers in regard to animal health legislation has meant that there are significant differences in the policies regarding bovine TB in England, Wales and Scotland. The Defra, Scottish Government and Welsh Assembly Government websites providing up-to-date detail on these policies can be accessed from the Animal Health website.

If you farm on the border of England and Wales or England and Scotland, you should be aware that the location of your animals at the time of the test would influence which protocols are relevant to you.

This leaflet is one of a series about dealing with TB in your herd. The leaflets are structured so that you should clearly be able to find the information you need, depending on the location of your farm.

DEALING WITH TB IN YOUR HERD leaflets are:

- 1 Bovine tuberculosis (TB): What is it? Why do we test for it? How do we detect it?
- 2 What happens if bovine tuberculosis (TB) has been detected in your herd?
- 3 Reactor animals
- 4 Inconclusive reactors
- 5 Valuation, slaughter and compensation
- 6 Movements on and off restricted premises
- 7 What further testing will be required?
- 8 Cleansing and disinfection
- 9 How to reduce the risk of bovine tuberculosis (TB) on your premises
- 10 Understanding the risk of bovine tuberculosis (TB) to cattle from wildlife
- 11 How to manage your milk quota
- 12 Legislation and enforcement of tuberculosis (TB) restrictions
- 13 Tuberculosis in deer
- 14 Tuberculosis in mammals
- 15 Tuberculosis in camelids

The Health Protection Agency, in association with Animal Health and others, has produced a leaflet providing information on the human health risks associated with bovine TB: Reducing the risk of human *M. bovis* infection: information for farmers.

This leaflet has been produced by Animal Health in association with:



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