NSW GOVERNMENT Department of Primary Industries

primefact

Anthrax information for private veterinarians – field test, treatment and vaccination

July 2017, Primefact 1568 , first edition
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Early detection of anthrax infection is important to prevent potential risks to human and animal health, prevent the contamination of food supplies, animal products and the environment and to minimise threats to domestic and export markets for animal products. For further information see the Anthrax Primefact. This fact sheet provides information to support private veterinarians undertaking Anthrax investigation in the field.

Field test for anthrax

The anthrax immunchromatographic antigen detection assay (ICT) is produced by the national Anthrax reference laboratory and the NSW Department of Primary Industries (NSW DPI) provides it free of charge to private veterinarians working in districts where anthrax exclusions are regularly conducted. Private veterinarians should contact their local District Veterinarian (DV) who will conduct training in the use of the ICT. Once trained, private veterinarians may order the ICT test kit from the State Veterinary Laboratory (SVDL). Ongoing access to ICT requires that private veterinarians follow the procedures in this Primefact.

Notification

- Inform your local DV that an Anthrax sudden death is being investigated. The notifications must include the Property identification code (PIC) and owner of property.
- Ring the Animal Emergency Disease hotline on 1800 675 888 if you are unable to contact the DV.

Biosecurity, Personal Protective Equipment (PPE) and Worker Health &Safety

- General information is available in the NSW DPI Emergency management procedures
- Anthrax is a zoonotic disease. If people have had potential contact with an anthrax infected carcass or product, they should be immediately referred to their General Practitioner or local public health unit.
- Personal protective equipment should be worn when investigating a potential anthrax case.
- People handling carcasses, tissues or body fluids of animals known to be, or suspected of being, infected with anthrax should work in a manner that reduces the likelihood of creating aerosols or dust. While handling, appropriate PPE must be used (gloves and clothing), and skin breaks covered. Additional PPE can be used which could include safety glasses (protects from splashes) and respiratory protection (protects where possibility of inhalation exists).

When to use the kits

- The ICT should be used at the carcass side where there is sudden unexplained death.
- The ICT is highly sensitive when used on cattle and sheep carcases that are less than 48 hours old (not live animals).

- If a carcass is more than 48 hours old, or the test has been used on another species, any ICT negative result must be confirmed by laboratory testing.

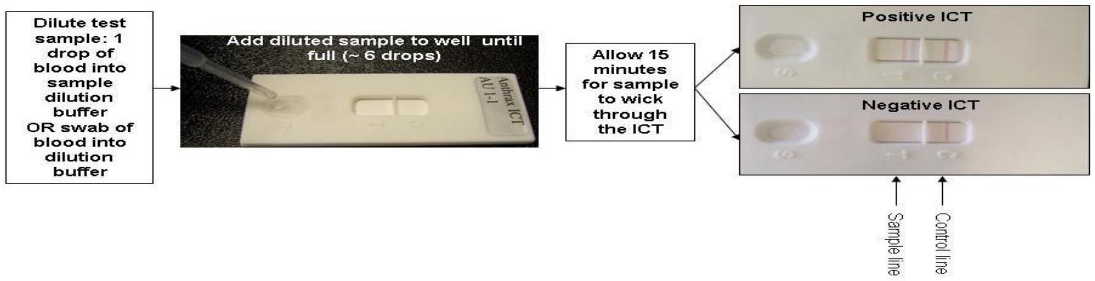
From the fridge to the paddock

- ICT kits must be stored and transported at 4°C or cool on ice.
- ICT kits must not be frozen.
- ICT kits to be used must be within expiry date.
- Before use, check the desiccant (drying agent) is blue. NOTE: Some desiccant pack may contain white / clear beads; blue beads must still be present.
- ICT kits must be used at room temperature (takes approximately 5 minutes to warm to room temperature).

At the carcase

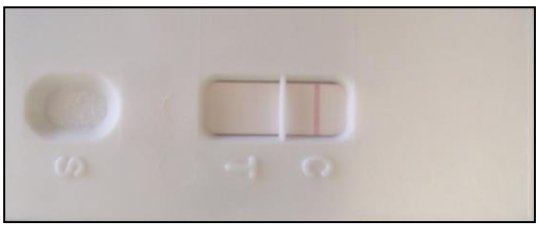
- Take the appropriate sample in an EDTA tube and label the tube.
- Add **1 drop** of blood to the buffer dilution vials and mix.
- Fill the well with the diluted sample. Avoid overfilling.
- Allow 15 minutes for the sample to move through the ICT before reading.
- Photograph the ICT as soon as read

Note: a line may be visible prior to 15 minutes.



Interpretation of ICT result

- Tests are not valid if the control line is not visible in 15 minutes.

Negative ICT	Positive ICT
No pink line in test window (T) and pink line in control window (C)	A pink line present in the T and C window. A weak line appearing in the test window T should be considered positive.
	
INTERPRETATION: The sample does not contain anthrax protective antigen or the concentration is below that detectable in this assay	INTERPRETATION: The sample contains anthrax protective antigen at a level greater than 25ng/mL.

- Tests should be repeated using a fresh kit if the test result is equivocal.
- All results must be phoned into the local DV immediately.

- A more detailed version of the Standard Operating Procedure (SOP) for Anthrax ICT is available

A negative ICT test must not override the veterinarian's clinical judgement. If the veterinarian strongly suspects anthrax but the ICT test is negative, collect further samples for submission to the SVDL and do not proceed with post mortem examination. The case should be treated as though positive for anthrax until proven otherwise.

Further testing, submissions and recording

- Where a negative ICT result and no laboratory anthrax test is requested, complete an ICT negative case report and submit to the local DV. The DV will record the negative ICT on the property record. This is critical surveillance information to support trade.
- All other ICT results and/or remaining suspicious cases of anthrax- require submission of samples to the SVDL. The laboratory submission advice must include the ICT result. The photograph of the ICT kit should be retained for 1 month. In the case of a discrepancy between the ICT and laboratory tests, the photograph is valuable to investigate possible causes.

To further improve the ICT, samples for culture are sent to the national anthrax reference laboratory when there are discrepancies between the ICT results and test results from the SVDL. In addition, for confirmed cases, samples for culture are sent to the reference laboratory for ongoing research on strains present in Australia.

Vaccination

When anthrax is confirmed or highly suspected, the DV will issue a directive to the owner or person in charge of all "at risk" stock (cattle/ sheep/ pigs) to vaccinate. See the Primefact: *Anthrax Vaccination in NSW.* In cases of high challenge, cattle, sheep and pigs may be given double the recommended dose to induce faster immunity providing an off-label use is authorised in writing by a veterinarian using *Stock Medicines Act 1989* sections 39A, 39D and 39E).

Horses are not normally vaccinated due to the risk of vaccine reactions. Written approval of the Chief Veterinary Officer is required for vaccination of horses and alpaca and vaccine should be administered at the normal dose rate.

Treatment

Anthrax can be treated with antibiotics, but it is extremely rare to detect infection early enough for treatment to be effective. Treating with antibiotics also interferes with vaccination and may prevent animals from being protected. For this reason vaccination of livestock is the preferred approach. Deaths due to anthrax normally stop within five to seven days of giving the vaccine.

Antibiotic treatment of valuable infected animals that have temperatures higher than 40 °C may allow complete recovery if given early in the course of the disease. Where it is likely that a herd has been exposed to a high level of anthrax and that multiple deaths will occur before immunity from vaccination has developed, use of antibiotics to prevent deaths may be considered. In such circumstances, the livestock must be removed from the high-risk areas of the property and vaccinated 10 days after completing the course of antibiotics.

Acknowledgments

The anthrax immunchromatographic antigen detection assay (ICT) section was adapted from a similar document produced by the Department of Environment and Primary Industries (Victoria). Permission to adapt this information is gratefully acknowledged

For updates go to www.dpi.nsw.gov.au/factsheets

ISSN 1832 6668

PUB17/48