

Ovine footrot: Fact Sheet 1

Laboratory diagnosis for outbreak specific vaccination of virulent footrot

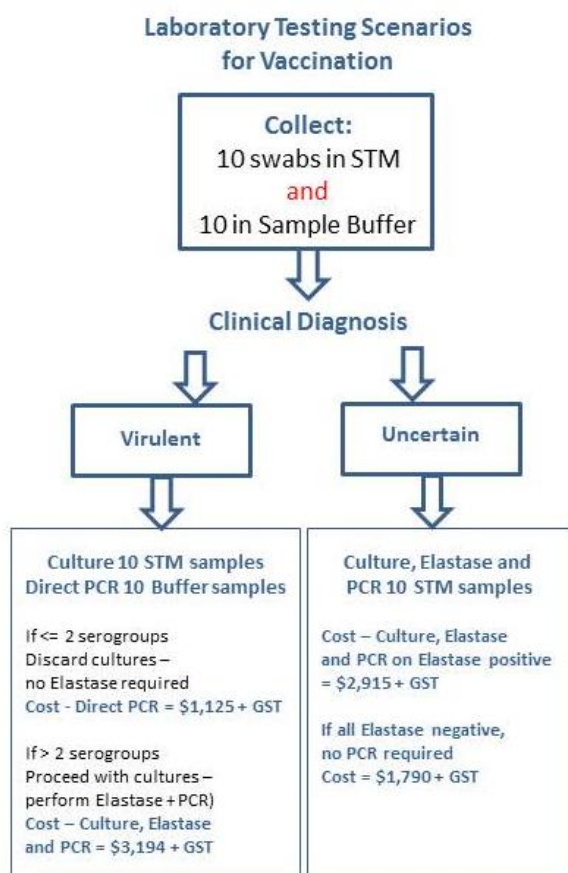
Footrot in sheep and goats is caused by the bacterium *Dichelobacter nodosus*. This organism is classified into 10 different serogroups in Australia. Up to 7 serogroups have been identified in a flock but usually 1 to 4 serogroups may be present. The response of sheep to vaccine is serogroup specific. To obtain adequate efficacy for treatment, control, eradication and prevention of footrot, vaccines are formulated with one or two serogroups.

The success of outbreak specific vaccination depends on making the correct diagnosis (confirm that virulent footrot is present) and identifying the serogroups that are prevalent in the flock. If there are only one or two serogroups only one type of mono-valent or bivalent vaccine is required. When there are more than two serogroups they can be targeted sequentially with different vaccines at three month intervals with the aim being to target most prevalent and most virulent serogroups first.

Footrot testing scenario for vaccination:

1. Collect 10 footrot lesion swabs in Sample Buffer for direct PCR. These samples should represent the whole flock, so collect these samples from as many affected mobs/age groups as possible. Usually 1 swab per sheep should be collected.
2. Collect 10 footrot lesion swabs into Stuart's transport medium (STM) from the same sheep and feet as above.

The next steps occur at the laboratory. We will set up microbiological cultures as soon as the samples are received because the bacteria are fragile and may be needed for diagnosis. The next steps are based on the clinical field diagnosis.



When the field diagnosis is virulent, we will perform direct serogroup PCR tests directly from the swabs:

- if ≤ 2 serogroups are detected we will discard the cultures. We will recommend which mono-valent or bivalent vaccine to use.

Cost for 10 swabs tested by direct PCR serogrouping tests = \$1,125 + GST

- if > 2 serogroups are detected we need to proceed with culture, perform the Elastase test and then perform PCR on the Elastase positive bacterial colonies to determine their serogroup. We will recommend which bivalent vaccine to use first; the remaining serogroups will be dealt with in successive rounds of vaccination (3 month intervals) if the clinical response to vaccination suggests this is needed.

Cost for 10 swabs tested by culture, Elastase and PCR serogrouping tests = \$3,194 + GST

When the field diagnosis is unclear, we will perform culture, the Elastase test and if this is positive we will then perform serogroup PCR on the Elastase positive bacterial colonies to determine their serogroup. We will recommend whether or not vaccination is likely to be worthwhile based on available evidence. If vaccination is required, we will recommend which bivalent vaccine to use first; the remaining serogroups will be dealt with in successive rounds of vaccination if the clinical response to vaccination suggests this is needed.

Cost for 10 swabs tested by culture, Elastase and PCR serogrouping tests = \$2,915 + GST. Note, this is the maximum cost; if Elastase test results are negative we will discuss the results with your veterinarian and we may not need to proceed with PCR, in which case the total costs will be: \$1,790 + GST

Note: all costs are correct as at April 2017 but subject to change and must be confirmed prior to submission of samples.



Procedure for collection of samples

Materials required:

- Sterile swab sticks
- Stuarts transport media tubes (STM tubes)
- Sample Buffer tubes
- Specimen advice form

Select animals with footrot lesions:

- Select ten suspect/infected animals from across the flock (Note: samples should represent infection in the entire flock rather than just in one mob).
- Select footrot lesions of different stages of infection from mild to severe.
- 10 swabs in sample buffer and 10 swabs in STM from the same 10 sheep are required.

Sampling procedure:

1. Examine the affected foot. Remove debris to expose the affected area (inter-digital or under the horn of the hoof). Hoof paring may be necessary to expose an under-run lesion.
2. Using a sterile swab stick, scrape infected material from the active margin of the footrot lesion. Avoid contamination with debris and blood.
3. Insert one swab sample into buffer tube and the other deep into the STM tube. Break off the stick but ensure a small length of it remains above the surface of the medium.
4. Replace the lid of the tube. Close the lids firmly. Label both tubes with the sheep number (eg Ear Tag No.).
5. Use a new swab for each tube, for each foot sampled.

Transporting samples:

- Place sample tubes in the brown box and into an Esky. Place ice bricks/cool packs and send by express courier service.
- Complete the specimen advice form. Place this in a plastic bag and include in the esky.

Address for sending the parcel:

Dr Om Dhungyel
The University of Sydney
Sydney School of Veterinary Science
Camden Campus
425 Werombi Rd
Camden NSW 2570

More information

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

For further details on the use of vaccine check with your local Vet/Animal Health Officer.

SheepConnect Tasmania has published a factsheet which describes the steps taken in a footrot eradication program using outbreak specific footrot vaccine. It can be accessed [here](#).

For laboratory testing contact: Dr. Om Dhungyel, Email: om.dhungyel@sydney.edu.au

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References to the scientific literature upon which we base these recommendations

Dhungyel, O., Schiller, N., Eppleston, J., Lehmann, D., Nilon, P., Ewers, A., Whittington, R., 2013. Outbreak-specific monovalent/bivalent vaccination to control and eradicate virulent ovine footrot. *Vaccine* 31, 1701-1706.

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Gurung, R.B., Dhungyel, O.P., Tshering, P. and Egerton, J.R., 2006. The use of Autogenous *Dichelobacter nodosus* vaccine to eliminate clinical signs of virulent footrot in a flock of sheep in Bhutan. *The Veterinary Journal* 172, 356-363.

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