

# LIVESTOCK HANDLER TRAINING MANUALS

## MODULE 3: SEASONAL PLANNING

# Lumpy skin and bluetongue



Insect-borne diseases that can only be prevented through vaccination.

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Developed by Dr Danie Odendaal

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## INTRODUCTION

This manual forms part of Afrivet's series on primary animal health care (PAHC) for small stock and has been developed to help the veterinarian, animal health technician, livestock owner and livestock handler to understand the methodology used when implementing PAHC and production management.

These manuals are ideally suited as practical training aids for training livestock handlers in the principles of planned production management, disease prevention and early disease identification.

The information contained in this manual is a summary of the material used by Afrivet Training Services for the formal training of animal health technicians, extension officers, livestock farmers and livestock handlers.

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## Insect-transmitted viral diseases cause large-scale outbreaks annually and are only preventable through vaccination.

There is no treatment after infection. As these viruses are transmitted by flying insects, they can be spread very fast to many animals over a large area.

The animal's own immune system must protect it against these viral infections.

If the animal is exposed to the virus for the first time, it takes two weeks for the body to develop resistance (immunity) against the virus. This is too slow to protect against the damage caused by the disease as this happens within two weeks of infection.

**The livestock handler must be able to identify these two diseases and provide supportive treatment to the affected animals.**

# Identification of lumpy skin disease in cattle

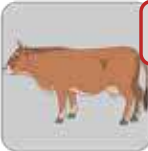
Identification of disease with daily observation card.

## Observation



### Behaviour

- head down



### Skin

- Lumps in skin, all over the body



### Walking

- Slow
- With difficulty



### Eating

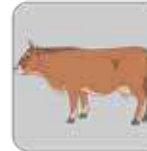
- Doesn't eat

## Examination



### Temperature

- $>40^{\circ}\text{C}$



### Skin

- Lumps in skin, all over the body
- Lumps attached to underlying tissue

### Lymph nodes

- Enlarged



Distinctive signs of disease for these conditions are shown in the red blocks.

# Identification of bluetongue in sheep

Identification of disease with daily observation card.

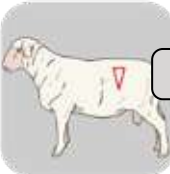
## Observation



### Mouth

- Lips swollen

- Face swollen



### Rumen fill

- Sunken in = empty



### Walking

- Lame in all four legs

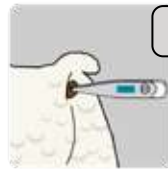
- With difficulty



### Eating

- Doesn't eat

## Examination



### Temperature

- $>40^{\circ}\text{C}$



### Mouth inside

- Sores on hard palate
- Tongue is dark red/blue
- Sores on lips

### Nose

- Slight excretion

### Eyes

- Slight excretion



### Front and back feet

- Red line at the junction of the hoof and skin



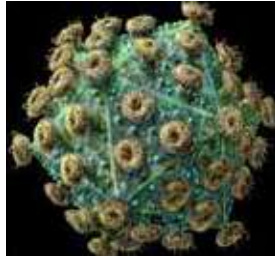
Photos: Dr Johan van Rooyen

# What is a viral disease?

Lumpy skin disease and bluetongue are caused by a virus.

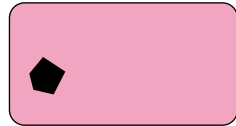
## What is a virus?

A virus is a very small infectious organism. It is so small that it is not even visible under a normal microscope.

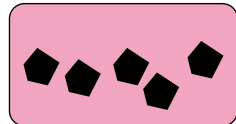


**A virus on its own is a non-living organism and cannot multiply. It only “comes alive” when it enters a living cell in which it can then replicate.**

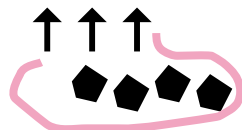
- When a virus enters a body cell, it takes over the replication mechanism of the cell.



- The virus then starts to multiply inside the cell, until the body cell is full of viruses.



- The damaged body cell bursts open, releasing the multiple viruses into the blood stream and/or the viruses can start infecting adjoining cells.



# Viral diseases transmitted by flying and biting insects

Most viruses are transmitted from one animal to the next by contact between animals.

But in the case of lumpy skin disease and bluetongue, flying insects that feed on the animals transmit the virus.



**These special viruses are, therefore, grouped together as insect-transmitted viral diseases.**

Many types of biting insects, even ticks, can transmit lumpy skin disease.

Midges transmit bluetongue.

Because these insects multiply very fast during the wet, warm months, they can spread viruses to many animals over a very large area within a short period.

## Antibiotics don't kill viruses

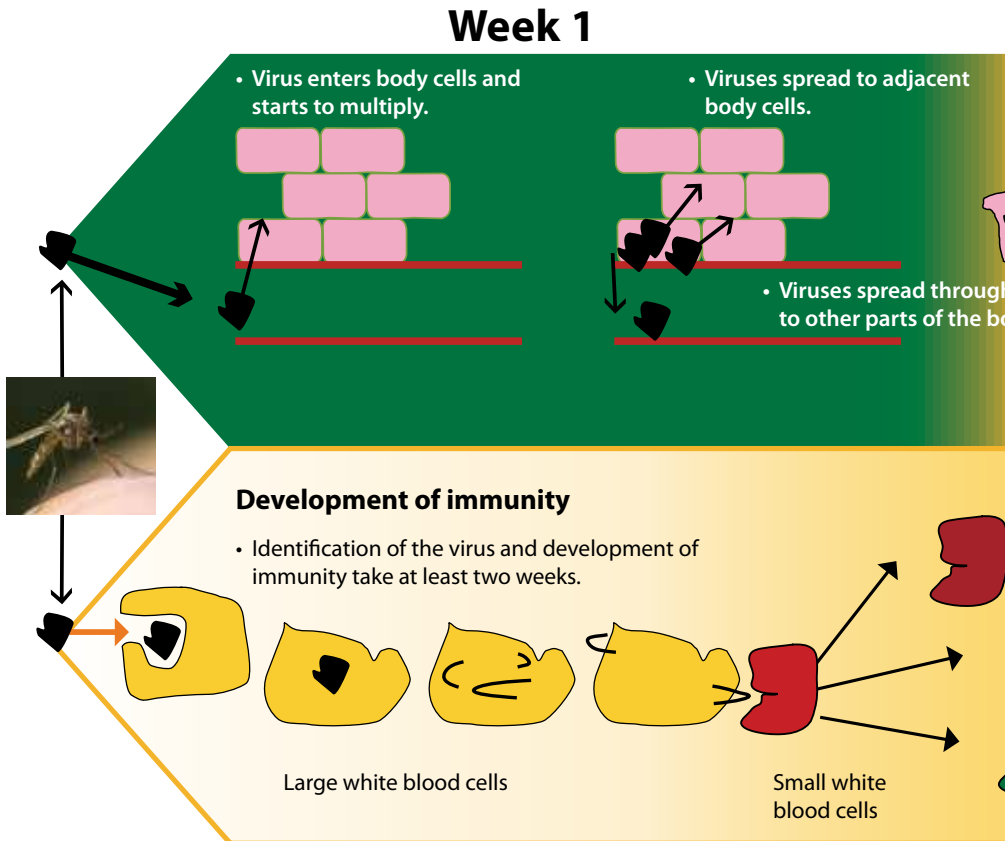
Because viruses are not single-cell living organisms, such as bacteria, antibiotics won't kill them. Antibiotics target the living cell structures of bacteria, which viruses don't have.

**At present, there is no treatment for livestock infected by viruses. These diseases, therefore, require prevention.**

**Animals can only be protected against viral infection through the body's own immune system.**

# Lumpy skin disease in cattle – the

Graphical illustration of the disease development process for lumpy skin disease until the first signs of disease are visible in the animal.



After infection, the body develops immunity against the virus disease, but this takes **at least two weeks**.

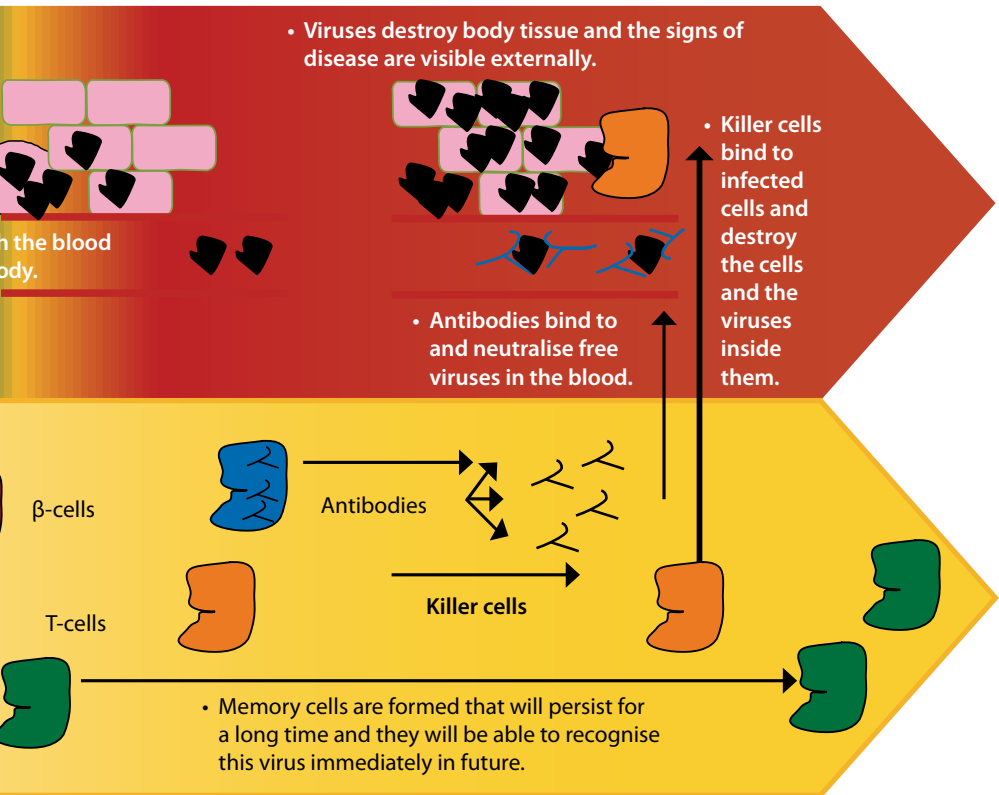


# The disease development process

A disease from transmission of the virus (infection) by the biting insect,

**Remember, that the development process and the type of body cells infected differ for each viral disease.**

## Week 2



**The limitation is that the development of protective immunity takes longer than disease development during which the disease causes damage to the body.**

# Vaccination to stimulate immunity against these diseases

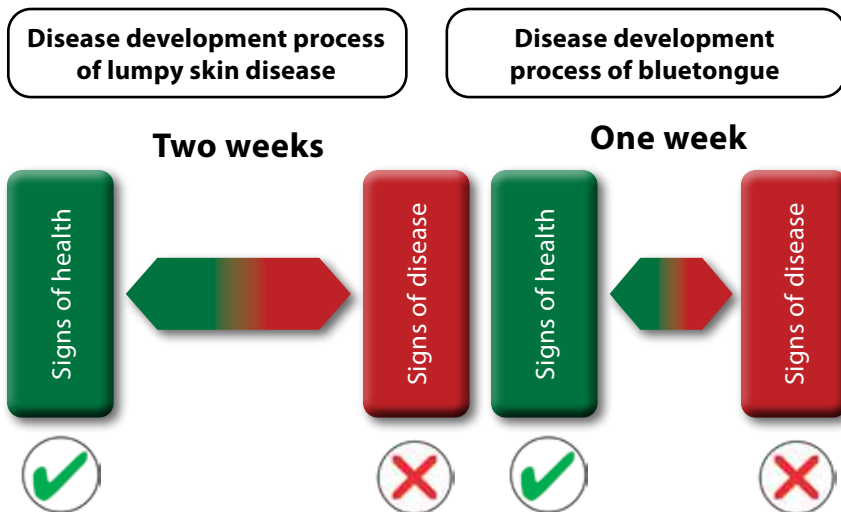
This is a very complex process, the basics of which appear on the previous page.

**The most important fact to remember is that it takes two weeks for the immune system to form protective immunity, if the animal has never been exposed to that disease before.**

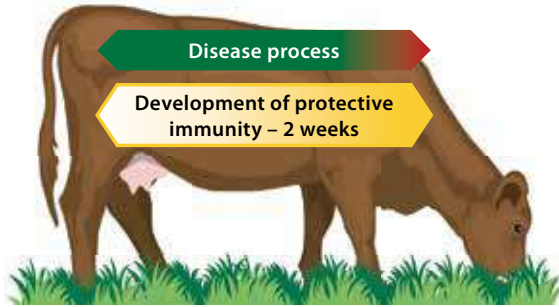
## The importance of vaccination against these insect-transmitted diseases

There are two reasons to vaccinate against these two diseases.

- 1** First, there is no primary treatment against these diseases.
- 2** Second, the damage the virus causes occurs faster than the time it takes for the body to develop immunity.



# What does vaccination achieve?



- The animal is vaccinated (injected) with a weakened viral strain.
- This vaccine virus will also multiply, but it will cause only minimal damage.
- The immune system will react against the vaccine virus as in the case of a natural infection.
- After two weeks, the animal will have developed protective immunity against the specific disease but with no damage done to the body.

# Infection in a vaccinated animal



- When vaccinated animals become infected (bitten by insect), the body immediately identifies the virus.
- The vaccinated animal then already has an active protective immunity and removes the virus before it can multiply and cause damage.
- There is no further disease development.
- Exposure to this disease further boosts immunity and the animal will have a very high level of protective immunity for a long time.

# First time vaccination an

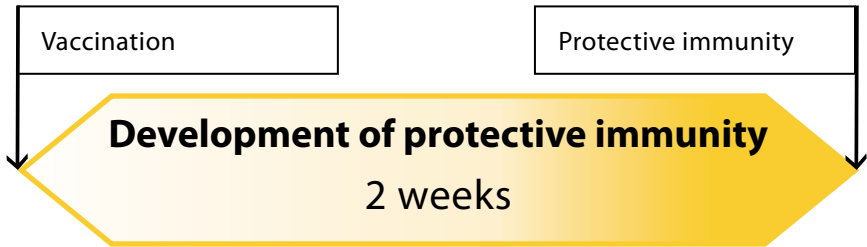
When vaccinating an animal for the first time, it takes two weeks for the animal's immune system to develop protective immunity against the disease.



When revaccinating an animal (booster vaccination), it will reactivate the protective immunity within a few days, causing it to have an active immunity for an extended period, at least one year on average.

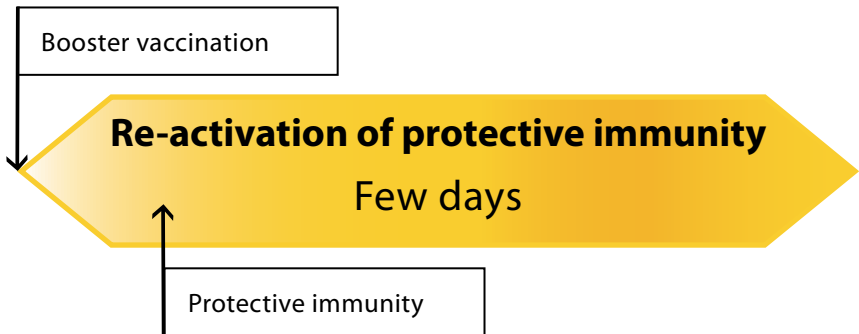
**Vaccinate annually in areas where these diseases occur regularly. Consult the veterinarian to find out if these diseases occur in your area.**

# and annual revaccination



### Important:

Animals that have never been vaccinated must get their first vaccination before insect-transmitted diseases occur. By the time the first signs of disease are visible, it is already too late to vaccinate because it will take too long before the animals become protected.



### Important:

Previously vaccinated animals can receive a booster vaccination just before the expected exposure. This will protect them within a few days. Under emergency conditions, you can also administer this booster with the first disease outbreak in an area.

**It is crucial to vaccinate all young replacement animals to ensure that the herd or flock does not become completely susceptible (naïve) over time. This can occur as young animals that were never exposed to virus diseases replace older animals. If you do not do this, it may result in large losses in the event of an outbreak.**



# Supportive treatment of sick animals

There is currently no treatment that can kill the virus once it has infected an animal. In unvaccinated animals, the virus will multiply, causing damage until the immune system activates and protects the animal two weeks after first exposure.

## The aim of supportive treatment for the affected animals:

1. Protect the animals from secondary bacterial infections.
  - These viruses cause lesions and wounds in the skin and the lining (mucus membranes) of the internal organs.
  - This gives bacteria a chance to enter through these wounds and cause secondary infection that can lead to pneumonia, for example.
  - Broad-spectrum antibiotics, such as tetracycline, can treat these secondary infections.
2. Provide highly nutritious and easily chewable food during the period when the animal doesn't or can't eat well.
3. Supplement with trace minerals and vitamins to support the development of immunity against the disease-causing virus and to stimulate the metabolism of the animal that is not eating well.



# Prevention of disease transmission in unvaccinated animals

There are circumstances when it is not possible to administer a preventive vaccination before the disease occurs in a specific area, such as:

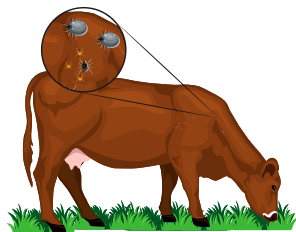
1. When vaccine was not available from the vaccine manufacturer
2. When disease occurs in an area where it does not normally occur

The only short-term (one to three months) action to protect susceptible animals completely is to prevent disease transmission by protecting the animals with a dipping compound effective against flying insects.

Deltamethrin is a pyrethroid dip that is highly effective against these insects, but like any dip, it will only protect for a limited period.

Weekly treatment is required when flying insects are very active during the mid-summer and autumn months.

**Ticks, and the damage they cause, can be controlled by weekly dipping.**



## TREATMENT OF BACTERIAL INFECTIONS USING ANTIBIOTICS

### ULTRATET LA

Reg No. G2857 (Act 36/1947)  
NSO V01/18.1.2/307

*Oxytetracycline 230 mg/ml*

Treatment of tick-borne gallsickness (anaplasmosis), heartwater, pneumonia, footrot, joint-ill and navel-ill in cattle, sheep, goats and pigs.

**Withdrawal period:**

**Meat:** 28 Days

**Milk:** 5 Days

**Administration:** IM or SC



Registration holder: ECO Animal Health Southern-Africa (Pty) Ltd Co.  
Reg. No.1992/000835/07



Packaging available

100 ml, 500 ml

 1 ml / 10 kg  1 ml / 10 kg  1 ml / 10 kg

### DELTAPOR 5

#### EXTERNAL PARASITE REMEDIES POUR-ON

G4252 (Act 36/1947)

Deltamethrin 0,5 % m/v / Piperonyl butoxide 2,5 % m/v

**CATTLE:** • Controls ticks • Controls stable flies, horn flies, cattle louse flies and nuisance flies e.g. house flies • Kills lice (biting and sucking) • Protects against blackflies

**SHEEP AND GOATS:** • Controls Karoo-paralysis, bont-legged and red-legged ticks



Registration holder: ECO Animal Health Southern-Africa (Pty) Ltd. Mpy. Reg. No. 1992/000835/07

**Withdrawal period:**

**Meat:** 7 Days

**Milk:** None



Packaging available

200ml, 500ml, 1 L, 5 L, 10 L

 1 ml/10 kg  1 ml/5 kg

### DELTAFORCE 100

#### EXTERNAL PARASITE REMEDIES PLUNGE & SPRAY

RSA Reg. No. G4367 (Act 36/1947)

Deltamethrin 10 % m/v

Controls all tick species, including blue ticks. Controls nuisance and biting flies on cattle, i.e. stable flies, house flies, cattle louse flies, black flies, horn flies. Controls screw-worm infestations. Controls tsetse fly.



**Withdrawal period:**

**Meat:** 21 Days

**Milk:** 24 Hours

Registration Holder: Afrivet Business Management (Pty) Ltd Co./Mpy. Reg. No.2000/011263/07



Packaging available

1 L, 5 L