



Livestock Production

Animal Anatomy, Physiology and

Animal Health

Handout 15

Onderstepoort Vaccination

Programme

PROGRAMME FOR SHEEP

Animals that have not been immunized before

Initial vaccination must be done according to management and breeding programs on a specific farm. The following schedule can be changed to fit specific farm needs.

Time of administration	Essential vaccines	Additional vaccines	Dose and route
9 weeks before breeding season	Bluetongue (ewes)	-	1 mℓ subcutaneously (ABC 3 weeks apart)
Just after the breeding season	Blue Tongue (rams)	-	1 mℓ subcutaneously (ABC vaccines 3 weeks apart)
At 6 months	Bluetongue	-	1 mℓ subcutaneously (ABC vaccines 3 weeks apart)
4 - 6 weeks before breeding season	Rift Valley fever (live vaccine) OR Clone 13	-	1 mℓ subcutaneously
	Chlamysure (Chlamydia)	-	1 mℓ subcutaneously
6 - 10 weeks before the lambing season	-	Gasgangrene (rams)	2 mℓ subcutaneously
	-	Blue udder (1 st inject)	2 mℓ subcutaneously
	-	Tetanus (1 st inject)	1 mℓ subcutaneously
2 - 4 weeks before the lambing season	-	Lamb dysentery (1 st inject)	2 mℓ subcutaneously
	-	Blue udder (2 nd inject)	2 mℓ subcutaneously
	-	Tetanus (2 nd inject)	1 mℓ subcutaneously
	-	Lamb dysentery (2 nd inject)	2 mℓ subcutaneously
From 2 weeks of age	-	Escherichia coli	2 mℓ subcutaneously
	Heartwater blood (0-21 days of age)		3 mℓ intravenously
	-	Pasteurella (1 st inject)	2 mℓ subcutaneously
	-	<i>A. pyogenes</i>	2 mℓ subcutaneously (lambs)
At 4 - 6 weeks of age	-	<i>C. ovis</i>	2 mℓ subcutaneously
	-	Pasteurella (2 nd inject)	2 mℓ subcutaneously

Before weaning (4 - 5 months of age)	Brucella Rev. 1 (rams)	-	2 mℓ subcutaneously
	Enterotoxaemia (1st inject)	-	1 mℓ subcutaneously
	-	Botulism (1 st inject)	1 mℓ subcutaneously
	-	Gasgangrene (1 st inject)	2 mℓ subcutaneously
	-	Pasteurella (3 rd inject)	2 mℓ subcutaneously
	-	Redgut (1 st inject)	2 mℓ subcutaneously
4 - 5 months of age	-	Redgut (2 nd inject)	2 mℓ subcutaneously
At 6 months	Enterotoxaemia (2nd Inject)	-	1 mℓ subcutaneously
	Rift Valley fever (live vaccine) OR Clone 13	-	1 mℓ subcutaneously
	-	Botulism (2 nd inject)	1 mℓ subcutaneously
	-	Anthrax	1 mℓ subcutaneously
	-	Gasgangrene (2 nd inject)	2 mℓ subcutaneously
	-	Swelled head (rams)	2 mℓ subcutaneously

Sustained immunization programme for adult sheep

Yearly or six monthly booster injections can be given in an annual breeding program. The following table is a practical example and could be changed to fit local circumstances.

Time of administration	Essential vaccines	Optional vaccines	Dose and route
Late winter - Early Spring (Aug - Sept) 4 - 6 weeks before stress and risk periods	Bluetongue	-	1 ml subcutaneously (3 vaccines 3 weeks apart)
	Enterotoxaemia (pulpy kidney)	-	1 ml subcutaneously
	-	C. ovis	2 ml subcutaneously
	-	C. pyogenes	5 ml subcutaneously
	-	Rift Valley Fever/Clone 13 Rift Valley (inacti)	1 ml subcutaneously 2 ml subcutaneously
Autumn (April - May) 4 - 6 weeks before stress and risk periods	Anthrax	-	1 ml subcutaneously
	-	Botulism	1 ml subcutaneously
	-	pyogenes	5 ml subcutaneously
	-	Pasteurella	2 ml subcutaneously
4 - 6 weeks before the breeding season	Chlamysure (Chlamydia)	-	1 ml subcutaneously
2 - 4 weeks before the lambing season	-	Blue udder	2 ml subcutaneously
	-	Tetanus	1 ml subcutaneously
	-	Lamb dysentery	2 ml subcutaneously
± 4 weeks before shearing	-	Escherichia coli	2 ml subcutaneously
	Anthrax	-	1 ml subcutaneously
	-	Quarter-evil	1 ml subcutaneously
	-	C. ovis	2 ml subcutaneously

IMMUNISATION FOR CATTLE

Animals that have not been immunized before

Initial vaccination can best be done according the management systems and breeding program of a specific farm. The following schedule can be changed to fit the specific farming conditions.

Time of administration	Essential vaccines	Optional vaccines	Dose and route
6 - 8 weeks before the breeding season	Rift Valley fever (inactivated) RVF (live vaccine) OR Clone 13	-	2 mℓ subcutaneously 1mℓ Subcutenously
	-	Vibriosis (1 st inject.)	2 mℓ subcutaneously (heifers) 5 mℓ subcutaneously (bulls)
3 - 4 weeks before the breeding season	-	Vibriosis (2 nd inject)	2 mℓ subcutaneously (heifers) 5 mℓ subcutaneously (bulls)
8 weeks before calving (heifer)	-	Escherichia coli (1 st inject)	2 mℓ subcutaneously
2 - 4 weeks before calving	-	Escherichia coli (2 nd inject)	2 mℓ subcutaneously
7 - 14 days of age	Paratyphoid (1st inj) (live or inactivated vaccine)	-	5 mℓ subcutaneously (live or inact) 10 mℓ subcutaneously (inact for cows)
	Heartwater blood (endemic areas) (0 - 21 days of age)	-	3 mℓ intravenously
	-	Pasteurella (1 st inject)	5 mℓ subcutaneously
3 - 8 weeks of age	-	<i>C. pyogenes</i> (1 st inject)	5 mℓ subcutaneously (<6 months) 10 mℓ subcutaneously (>6 months)
	Paratyphoid (2nd inject) (Inactivated vaccine at 3 weeks of age)	-	5 mℓ subcutaneously (live or inact) 10 mℓ subcutaneously (inact for cows)
	-	Pasteurella (2 nd inoc.)	5 mℓ subcutaneously
	-	<i>C. pyogenes</i> (2 nd + 3 rd inject)	5 mℓ subcutaneously (<6 months) 10 mℓ subcutaneously (>6 months)

4 months of age	Contagious abortion S19 (heifers at 4 to 8 months)	-	2 mℓ subcutaneously
	**Gall sickness (3-9 months) endemic areas	-	1 mℓ intramuscularly
5 - 6 months of age or at weaning	Botulism/Blackquarter (1st inject) OR Botulism/Gasgangrene (1st inject) OR Doublesure	-	5 mℓ subcutaneously OR 5 mℓ subcutaneously 2 mℓ subcutaneously
	Anthrax	-	1 mℓ subcutaneously
	-	Redwater (3-9 months) (endemic areas)	1 mℓ intramuscularly
5 - 6 months of age or at weaning	Rift Valley fever (inactivated vaccine) Clone 13 Rift Valley live	-	2 mℓ subcutaneously 1 mℓ 1 mℓ
	Botulism/Blackquarter (2nd inject) OR Botulism/Gasgangrene (2nd inject) OR Doublesure	-	5 mℓ subcutaneously OR 5 mℓ subcutaneously 2 mℓ subcutaneously
	Lumpy-skin disease	-	5 mℓ subcutaneously
	B.Phemeral (Dairy cattle)	-	2 mℓ subcutaneously

** Gall sickness + Redwater vaccine can be administered together.

Sustained immunization programme for adult cattle

Yearly or six monthly booster injections can be given. The following table is a practical example that can be changed to fit the local farming conditions.

Time of administration	Essential vaccines	Optional vaccines	Dose and route
Late winter, Early spring (Aug - Sept)	Three-day stiff sickness	-	2 mℓ
	Lumpy skin disease	-	2mℓ subcutaneously
	Rift Valley fever (Inactivated vaccine) Clone 13	-	2 mℓ subcutaneously
	Rift Valley (Live)	-	1 mℓ
	-	C. pyogenes	10 mℓ subcutaneously (<6 months) & 5 mℓ subcutaneously (>6 months)
Autumn or early winter (April - June)	Blackquarter/Botulism OR Gasgangrene	-	5 mℓ subcutaneously OR 5 mℓ subcutaneously
	Anthrax	-	2 mℓ subcutaneously
	Botulism – (if combinations were not used)	-	2 mℓ subcutaneously
	-	C. pyogenes	10 mℓ subcutaneously (>6 months)
	-	Pasteurella	5 mℓ subcutaneously
± 4 weeks before breeding	-	Vibriosis	2 mℓ subcutaneously (heifers) 5 mℓ subcutaneously (bulls)
2 - 4 weeks before calving	-	Escherichia coli	2 mℓ subcutaneously

HORSES

Animals that have not been immunized before

Time of administration	Essential vaccines	Dose and route
Foals from susceptible mares at 2 weeks of age	Equine influenza-	2 mℓ intramuscularly
Foals from susceptible mares at 1 month of age	African horsesickness	2 mℓ subcutaneously
Foals from immune mares at 3 months of age	Equine influenza	2 mℓ intramuscularly
	Tetanus	1 mℓ intramuscularly
5 months of age	Equine influenza	2 mℓ intramuscularly
	Tetanus	1 mℓ intramuscularly
Foals from immune mares at 5 - 6 months of age (in high risk areas) and again in spring (Aug - Spring)	African horsesickness	2 mℓ subcutaneously
8 months of age	Equine influenza	2 mℓ intramuscularly

Sustained immunization programme for adult horses

Time of administration	Essential vaccines	Dose and route
At 6 monthly at any time of the year	Equine influenza-	2 mℓ intramuscularly
Annually during spring (Aug - Sept) Pregnant mares should be vaccinated 6 weeks before foaling	African horsesickness	2 mℓ subcutaneously
12 months of age and then annually	Tetanus	1mℓ intramuscularly

IMMUNIZATION SCHEDULES

The immunization schedules, which follow, are merely a suggested outline that may be adapted to your farming situation.

Various factors are responsible for the spreading of disease. Certain diseases only occur in specific geographic or climatic areas or under particular management practices with specific groups of animals. There is no necessity to vaccinate against diseases which do not occur in the area. When deciding to vaccinate for a disease numerous factors should be taken into account.

1. What is the risk of infection to the herd should they not be vaccinated?
2. What are the potential economic losses associated with the disease in unvaccinated animals?
3. What risk factors are present in the herd or will play a role in the future? It is recommended that animals be vaccinated before high risk procedures (eg quarter-evil before shearing) or high risk conditions (eg botulism before feeding chicken manure).
4. Can the disease be controlled without vaccinating?
5. What information is available with regard to vaccine against the disease?
 - Type of vaccine available eg live or dead. Is there any potential danger when using the vaccine (eg. Rift Valley fever which could cause abortion in pregnant animals)?
 - Efficacy of the vaccine and successful use in the past.
 - Can the vaccine combat clinical disease as well as infection?
 - Does the presence of colostrum immunity have an effect on the vaccine?
 - What is the duration of immunity provided by the vaccine?
 - What is the result of a crude cost- benefit analysis based on the expected economic losses associated with morbidity and mortality in the vaccinated and nonvaccinated groups?
6. Type of farming and management practices applied.
7. Vaccination will have to be modified to fit in with the management practices such as lambing season, shearing season, weaning season, etc.

It is therefore clear that a unique vaccination schedule must be determined for each farm or herd. The local practising veterinarian is the person most suited to consult as he has an in-depth knowledge and experience of local conditions.