

Key points to note...

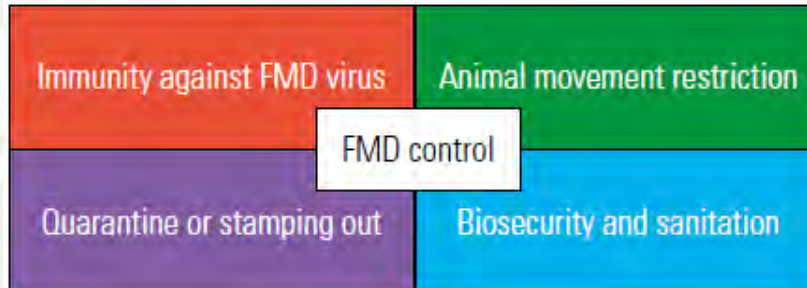


- ❑ The cost of vaccine and vaccination accounts for >90% of the FMD control program.
- ❑ However, vaccination is one, among others, of an overall FMD control program.
- ❑ Lack of outbreaks should not be taken as assurance of an effective vaccination program.

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The elements of FMD control



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Vaccine efficacy & effectiveness



- ▶ Vaccine efficacy
 - A measure of how well a vaccine protects against homologous viral challenge e.g. the cattle potency test as described in the *OIE Terrestrial Manual*
- ▶ Vaccine effectiveness
 - An indicator of how well animals are protected in the field by a programme of vaccination.
 - does not only depend on vaccine quality but also other factors such as **vaccine storage**, **distribution**, **vaccination schedule** and **vaccine match**.

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Factors to be considered in audit



□ Host factors

- Age of vaccinates (young animals receiving one dose)
- Health condition (stress, nutrition, infection)
- Time of last vaccination (animal missing boosters)

□ Vaccine Application

- Vaccination schedule (lapses in the intervals)
- Trained vaccinators
- Cold chain
- Vaccine coverage (herd-level immunity)

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Factors to be considered in audit



□ Vaccine characteristics

- Vaccine match (to circulating strains)
- Potency
- Stability
- Purity
- Shelf life (expired vaccines)

□ Overwhelming challenge due to lack of other effective FMD control measures

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Post Vaccination Monitoring



- ❑ Post vaccination sero-monitoring should be an integral component of an FMD control program
- ❑ It is a requirement for countries seeking official recognition by OIE (endorsement of national FMD control program for freedom with vaccination)

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Objectives of PVM



- ❖ Determine vaccination coverage
- ❖ Determine the dynamics of antibody response to vaccination (evaluation of immune response)
- ❖ Demonstrate the impact of vaccination
- ❖ Demonstrate freedom from infection

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Importance of PVM



- ❖ Assists in the evaluation of vaccine performance
- ❖ Identifies causes of ineffective vaccination
- ❖ Optimization of vaccination strategy/program
- ❖ Optimization of resources
- ❖ Improvement of the quality of vaccines

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CASE STUDY

(Bohiwakgomo Ranch)



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Methodology



- ▶ A sample of 60 animals was selected from a herd of approximately 600 animals.
- ▶ The animals were divided into three categories according to age.

	BOHIWAKGOMO CRUSH		
	Zero tooth	<2 yrs.	>2 yrs.
No. of cattle involved in study	20	20	20
Vaccination carried out	May 2014		
Booster Vaccination	D28		
Sampling Days (4 sampling time points)	D0, D14, D28, D42, D120		

Methodology



- ▶ Serum was collected prior to vaccination (Day 0) and thereafter on Days 14, 28, 42, & 120
- ▶ Booster vaccination was done on Day 28
- ▶ All the sera was analyzed at BNVL
 - Liquid Phase Blocking ELISA
 - Non Structural Protein (NSP) ELISA

Results



- ▶ There was an excellent study animal retention – only one (1) study animal was lost due to predation

	Day 0	Day 14	Day 28	Day 42	Day 120
Zero Tooth	20	20	20	20	20
< 2 years	20	20	20	20	20
> 2 years	20	19	19	19	19

Distribution of titre levels across the three SAT serotypes



NSP Test Results



- All animals tested NSP negative

	Day 0	Day 14	Day 28	Day 42	Day 120
Zero Tooth	0	0	0	0	0
< 2 years	2	0	1	1	1
> 2 years	0	0	0	0	0

- Positive animals could be attributed to false positive

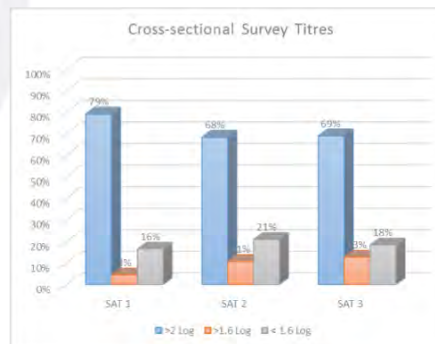
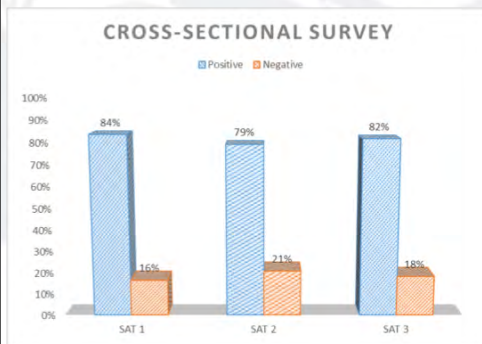
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Cross Sectional Study



- 158 animals were randomly sampled from 18 crush pens
- Samples were collected just before vaccination



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Conclusions



- ❖ Vaccination is pivotal in the management of FMD
- ❖ Ineffective vaccination is a risk and a cost
- ❖ Vaccination ineffectiveness is multifactorial. The different factors must be analysed and controlled.
- ❖ PVM is an essential tool in monitoring vaccination effectiveness
- ❖ Other FMD control measures must be addressed in order to have an effective FMD control program
- ❖ All stakeholders must be involved in order to have a successful vaccination program

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