



IMPORTANCE OF SURVEILLANCE AND VACCINATION FOR MANAGING FMD

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BVI Foundation



Technical partnership with Merial (now Boehringer Ingelheim Animal Health) signed in May 1978 for BVI to produce vaccines under license

BVI was established following the Foot and Mouth (FMD) outbreak of 1977/78 in the Northern part of Botswana

BVI registered on the 5th December, 1979 as a public company limited by Guarantee. The company is 100% wholly owned by Botswana Government.



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Our Services



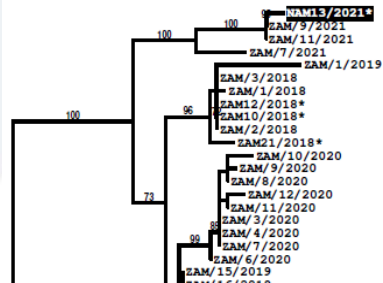
Vaccine Manufacturing

Confirmatory diagnosis of FMD

Provision of FMD diagnostic reagents

Vaccine Matching

Laboratory technical support for FMD diagnosis



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3

Our Products



- Aftovaxpur (Purified)
- Aftovax (Non-purified)
- PPR
- Peribov (CBPP)
- Carbovax (Anthrax)
- Asymptol (Blackleg)

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4

Why the fuss with FMD surveillance and control ???



- ✓ Highly Infectious Disease (mainly type O)
- ✓ Virus excretion up to 4 days before appearance of clinical signs
- ✓ Many routes of transmission
- ✓ Very low doses of virus can initiate infection
- ✓ Multiple cloven-hoofed animal species are susceptible
- ✓ More than 60 strains within the 7 serotypes of the disease
- ✓ No cross protection between each serotypes

5

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However...



- ✓ Low mortality (1 - 5%)
- ✓ Reduction in milk yield a common feature (particularly in dairy herds)
- ✓ In communal grazing systems, morbidity can be quite low (particularly for SAT serotypes)
- ✓ Disease heals very quickly
- ✓ Effective vaccines are available

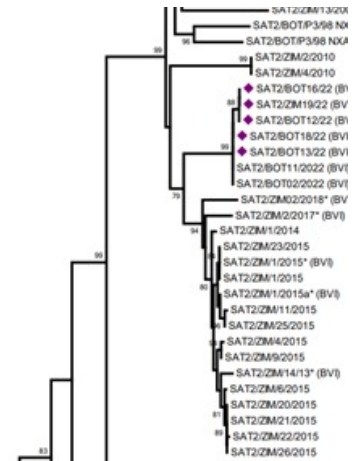
6

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Objectives of FMD surveillance

Generally aimed at:

- ✓ (i) **Detecting infection as early as possible**
 - ✓ Most FMD cases reported through passive surveillance (farmers)
- ✓ (ii) **Determining the extent of infection**
 - ✓ Serological surveillance important
- ✓ (iii) **Demonstrating the absence of infection**
 - ✓ For countries that wish to trade



7

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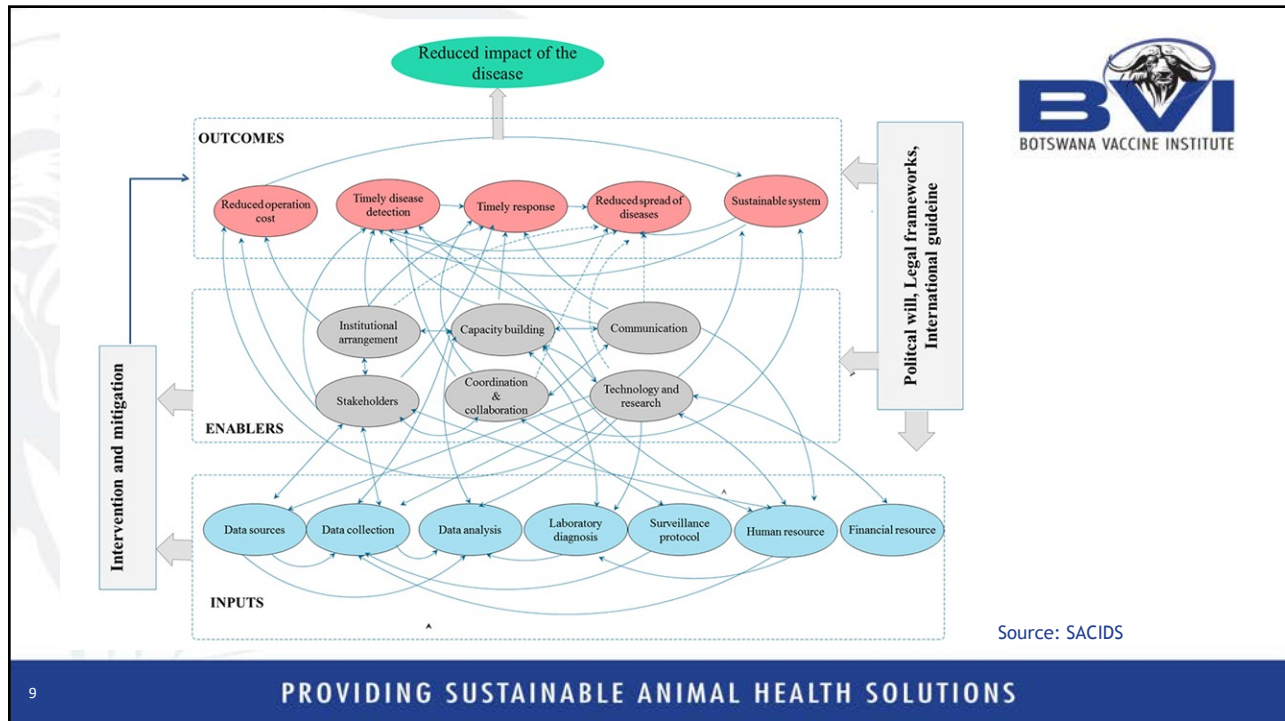
FMD Surveillance

- ✓ Requires an effective surveillance system
 - ✓ Resources (manpower, transport etc)
 - ✓ Organised information/communication management system
 - ✓ Reporting system
 - ✓ Data analytics
 - ✓ SOPs
 - ✓ Diagnostic facilities (turn around time for results)
 - ✓ Challenges with sample transportation to reference laboratories
 - ✓ System-based integrative approach
 - ✓ Inclusion of various stakeholders



8

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Principles of FMD vaccination

- ✓ Vaccination is an essential component of FMD control
 - ✓ NB: Other measures such as **animal movement control**, are equally important
- ✓ A FMD vaccine stimulates a predominantly humoral immune response in the vaccinated animal
 - ✓ There is good correlation between antibody level and protection against live virus challenge by the same strain from which the vaccine was produced.

Vaccine (antigen) → Host animal → Antibodies

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Principles of FMD vaccination cont...

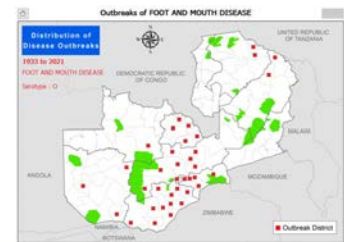


✓ Protective Vaccination:

- ✓ used in herds that are at high risk of infection but are not yet exposed to live virus
- ✓ Once vaccinated, these animals present a barrier to spread of infection if introduced

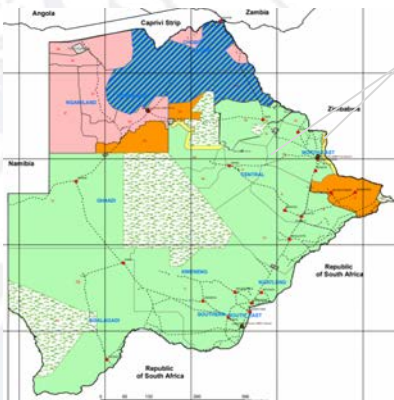
✓ Suppressive Vaccination:

- ✓ used to reduce potential FMD virus production in herds that may already have been exposed to infection
- ✓ By vaccinating all animals, it is hoped that those not already infected will mount sufficient immunity to provide at least partial protection against clinical disease.
- ✓ Thus, it is very important animals are vaccinated before they are exposed to infection



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2017



3b and 4a declared free

2019

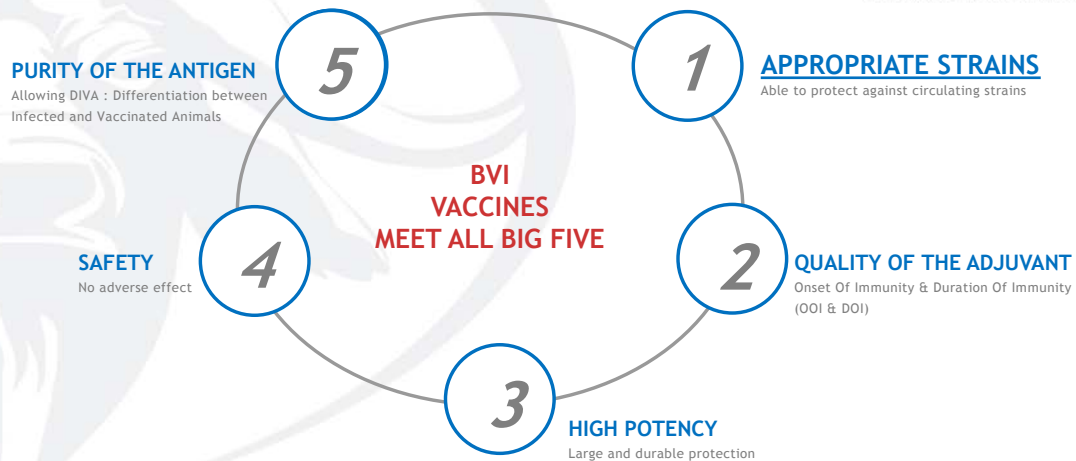


Zone 7
declared
free



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THE BIG FIVE QUALITIES OF AN FMD VACCINE



13

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Conditions for good effectiveness of FMD vaccines



- ✓ Store vaccine between +2° C and +8° C
- ✓ Vaccinate all healthy animals, at least 70% of the herd
- ✓ Correct route of administration
- ✓ Correct dose as indicated by manufacturer

14

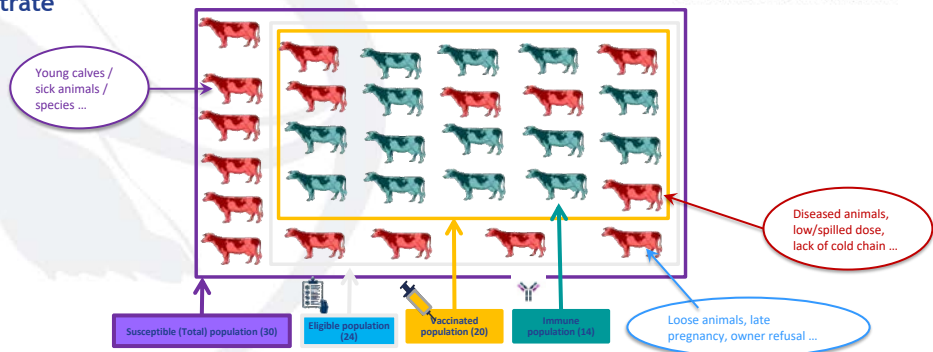
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Post Vaccination Seromonitoring (PVM) 80-85% VACCINATION COVERAGE IS A TRICKY TARGET



Example population to illustrate different components:

- non-vaccinated,
- vaccinated
- vaccinated-but-not-immune



Vaccine coverage is 20 out of 24 = 83%
 Vaccine population immunity is 14 out of 20 = 70%
 Vaccinated population is 20 out of 30 = 67%
 Overall population immunity is 14 out of 30 = 47%
 + potential complications due to immunity from infection

OVERALL POPULATION IMMUNITY IS 14 OUT OF 30 = 47%

Extract from "FMD vaccination and PVM Guidelines" FAO&OIE, 2016

15

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Conclusion



- ✓ An effective surveillance system is important in the management of FMD
- ✓ A system-based integrated approach is likely to yield better results
- ✓ Vaccination should be an integral part of FMD control
- ✓ Regional collaboration and cooperation is required.

16

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**THANK YOU
FOR
YOUR ATTENTION**



Wildlife and Livestock can co-exist !!!

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