Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs FDEA
Federal veterinary office FVO

Evaluation of the benefit and feasibility of a vaccination-to-live strategy in FMD free countries

D.C. Hadorn[1], S. Dürr[2], B. Thür[3], L. Perler[1], T. Jemmi[1]
[1] Swiss Federal Veterinary Office, [2] Veterinary Public Health Institute,
[3] Institute of Virology and Immunoprophylaxis

EuFMD Open Session 2012

Evaluation of FMD emergency vaccination in Switzerland

Basic questions to be answered to adjust contingency planning:

a) Target species for emergency vaccination (cattle – small ruminants – pigs)
b) Dimension of vaccination zone (3 km = V3 or 10 km = V10)
c) Time frame for emergency vaccination (immediately after detection of first case or later)
d) Feasibility of a „vaccination-to-live“ strategy (Council Directive 2003/85/EC)

…in order to achieve a benefit compared to conventional disease control only

Materials and Methods

- Simulation of FMD spread (serotype O „middle east“) within and between herds (local area spread, direct and indirect contacts) with Davis Animal Disease Simulation model[1]

General input parameters	*Value[1]*
Initial diagnosis delay (diagnosis delay for index case)	10 days
Second diagnosis delay (diagnosis delay for secondary cases)	4 days

Inputs for emergency vaccination	*Value[1]*
Application delay for 3 km vaccination zone	3 days
Application delay for 10 km vaccination zone	6 days
Protection delay for vaccination	14 days
Vaccine efficacy on herd level	0.9

[1]Dürr et al. Evaluation of the benefit of emergency vaccination in a foot-and-mouth disease free country with low livestock density. Submitted to PVM.

Results

a) Target species for emergency vaccination

✓ Cattle Small ruminants Pigs

b) Dimension of vaccination zone and

c) Time frame for emergency vaccination

- No benefit for emergency vaccination under Swiss situation* if vaccination campaign is started right after detection of first case (neither 3 km nor 10 km vaccination radius)

  ** Low animal density (<167 ruminants and pigs / km²)*

- If the epidemic becomes extensive, vaccination with radius of 10 km around IP may be beneficial in terms of reducing the number of herds infected and the epidemic duration

d) Feasibility of vaccination-to-live strategy

Goal of vaccination-to-live strategy:

COUNCIL DIRECTIVE 2003/85/EC

of 29 September 2003

on Community measures for the control of foot-and-mouth disease repealing Directive 85/511/EEC and Decisions 89/531/EEC and 91/665/EEC and amending Directive 92/46/EEC

(26) By means of emergency vaccination without subsequent killing of the vaccinated animals the number of animals to be killed for disease control purposes may be reduced significantly. Appropriate testing should thereafter substantiate the absence of infection.

Restriction zone	Measures in terms of animal movement	Minimum duration
Protection Zone	No animal movement between holdings within, in and o[illegible] „Stand-still“ 15 days…	**At least 15 days** plus time for killing & disposal & preliminary cleansing and disinfection
Surveillance Zone	No animal movement out of surveillance zone; animal movement between holdings permitted after clinical inspection	**At least 30 days**
Vaccination zone		At least 6 months in total
Phase 1	No animal movement between holdings with[illegible]n, in and [illegible] „Stand-still“ 30 days… (e.g. V10 in Switzerland: 6+30+18 = 54 days)	Time for vaccination **plus 30 days**
Phase 2	No a[illegible]n, in and [illegible]	Time for clinical and serological survey plus classification of herds
Phase 3	No animal movement out of vaccination zone; animal movement between holdings is subject to authorization; unvaccinated animals with restrictions (testing)	6 months minus time for phase 1 and phase 2

d) Feasibility of vaccination-to-live strategy

- Animal movement restriction within vaccination zone (phase 1 and 2) is as severe as in protection zone but more than twice as long

Significant increase in welfare culling, mainly in pig production sector, expected

(26) By means of emergency vaccination without subsequent killing of the vaccinated animals the number of animals to be killed for disease control purposes may be reduced significantly. Appropriate testing should thereafter substantiate the absence of infection.

Discussion

Under Swiss conditions and in terms of the actual legal basis, the feasibility of a vaccination-to-live strategy is not given.

Points to be discussed:

- Adaptation of restriction measures if vaccination zone is established outside protection/surveillance zone (different risk)
- Necessary duration of „stand-still“ within vaccination zone (only during vaccine application phase?)
- Adaptation of restriction measures in holdings with and without vaccinated animals (target species of vaccination program?)