



Project: Technical assistance to improve implementation of food safety standards and disease crisis preparedness

Training course: Epidemiological investigation of FMD in bovine animals

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Content of the presentation



1. General overview,
2. Purpose of investigation,
3. Epidemiology of the disease,
4. Outbreak dynamic,
5. Lesions ageing,
6. Questions that need to be answered,
7. Elements of epidemiological investigation,
 - Preparing for investigation
 - On spot investigation
 - Reporting

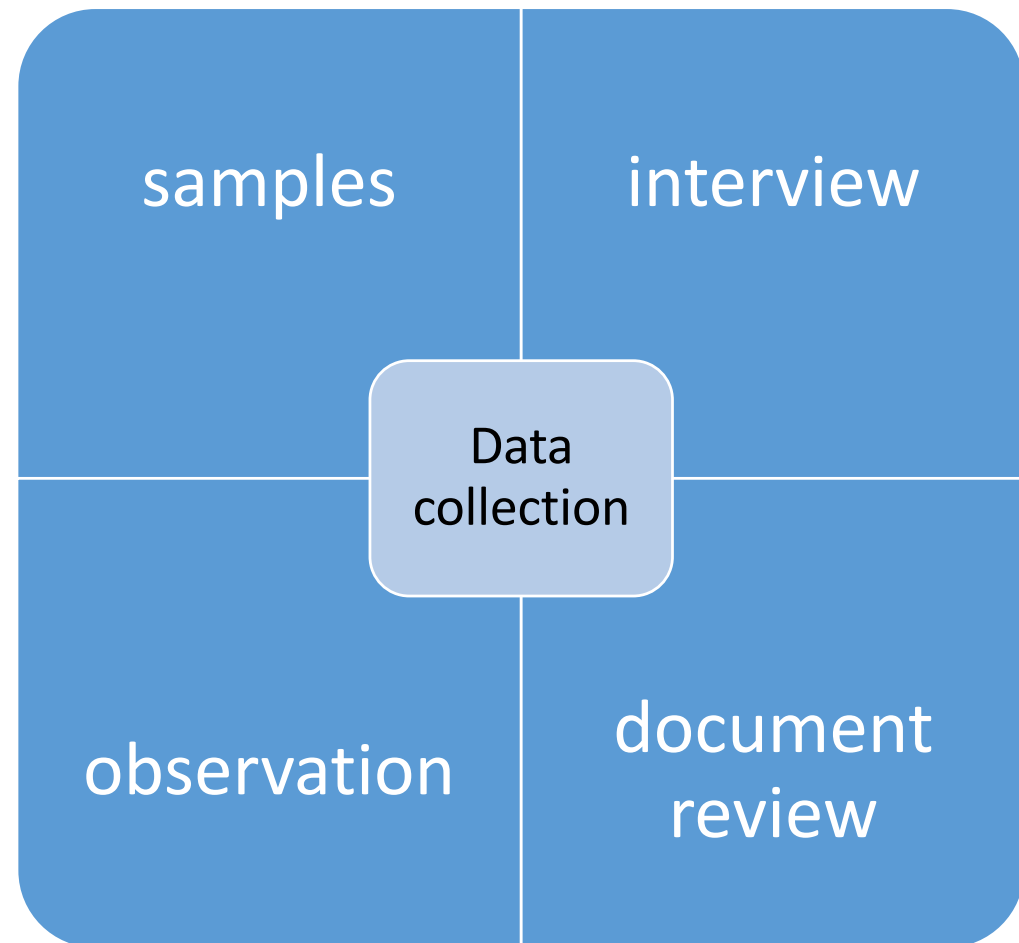
What is epi investigation?



Investigating an outbreak of disease primarily involves:

- **gathering,**
- **recording,**
- **analyzing, and**
- **reporting information.**

The general responsibility of the **officials investigating** the disease suspicion or an outbreak is to **detect the factors and circumstances leading** to the event.



The purposes of the investigation



- The purpose of the investigation is to provide: an assessment of the **introduction** of the FMD virus in a holding
- The **spread** of the virus on the holding and potential lateral **transmission** routes of the viruses from infected premises to other premises



The reasons for investigation



The reasons for investigation can be the following which should as well be taken into consideration:

- suspicion,
- contact holdings,
- outbreak,
- surveillance on holdings in restriction zones,
- other

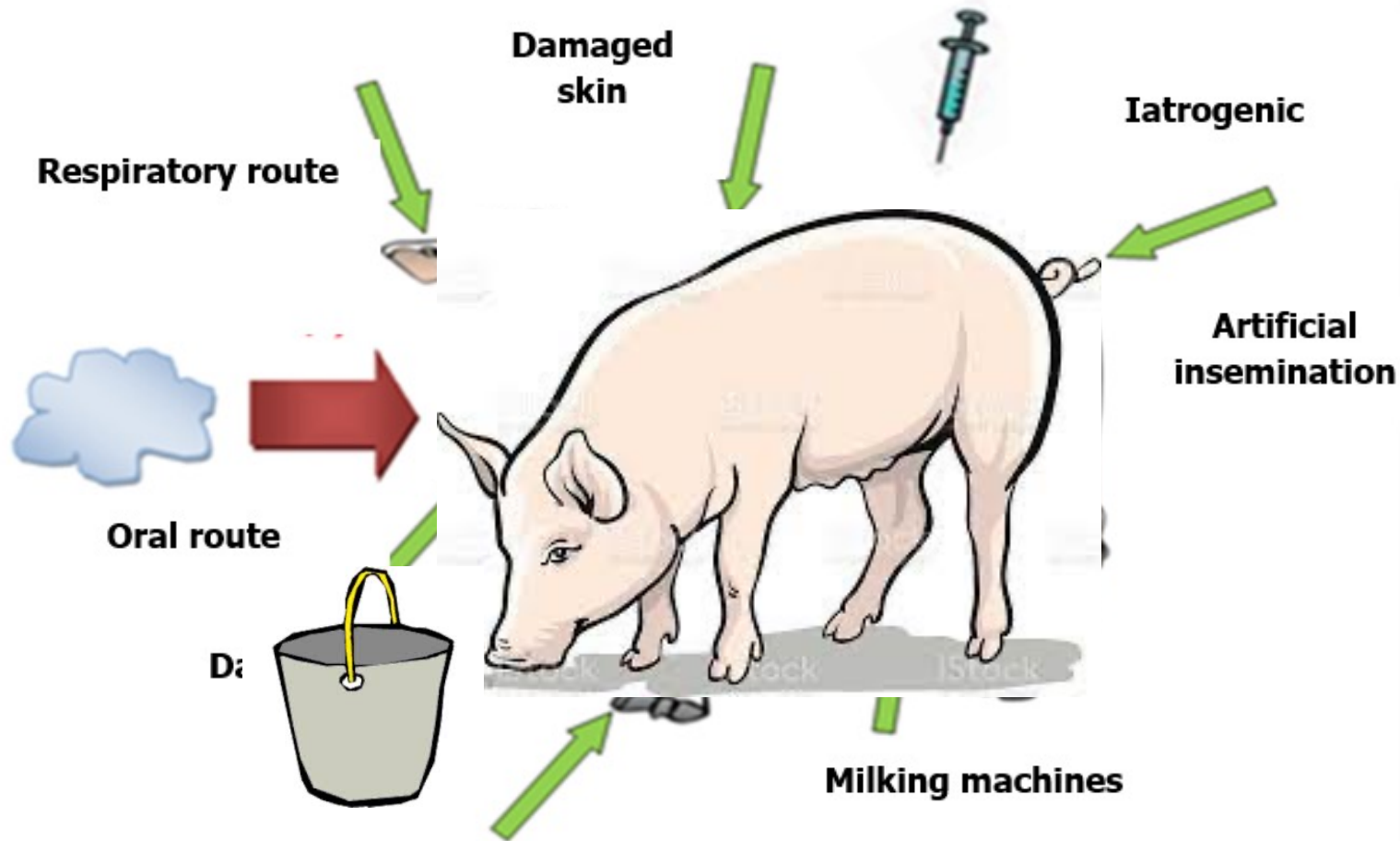


- One of the **most contagious** viral disease that mainly affects cattle and swine but it can also affect sheep, goats and other cloven-hoofed ruminants and wild cloven-hoofed animals
- family *Picornaviridae*, genus *Aphthovirus*
- **Seven** immunologically distinct serotypes: A, O, C, SAT1, SAT2, SAT3, and Asia1 which do **not confer cross immunity**
- **Low** mortality rate in old animals



- **Direct** contact,
- Virus can be shed through the **breath, saliva, faeces**, and urine; milk and semen (up to 4 days before clinical signs),
- Contaminated animal **products**,
- **Fomites or iatrogenic**,
- **Through the air (wind)**,
- Incubation **few days to 2 weeks**

Epidemiology of FMD - 3



Epidemiology of FMD - 4

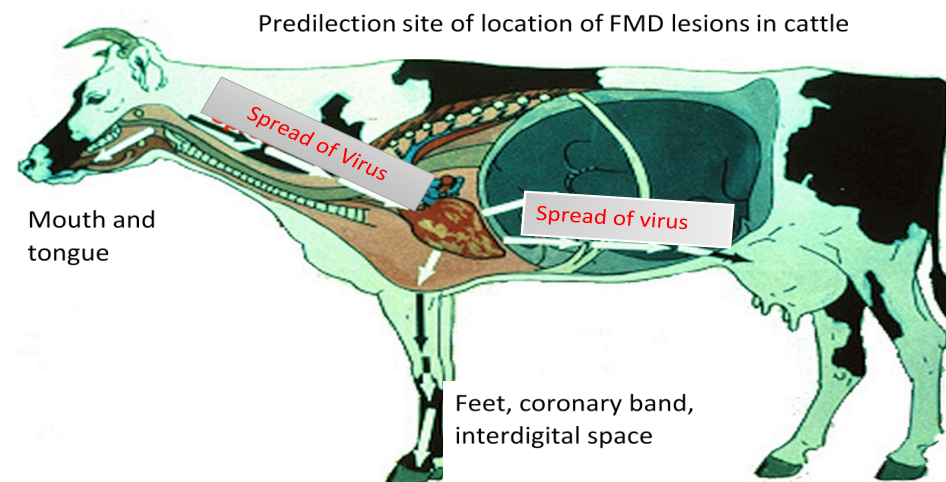


Domestic

Anorexia
Fever
Depression
Lameness
Reduced milk, mastitis
Salivation
Death of young animals
Vesicles and lesions
Recovery in 2 – 3 weeks

Wild

No signs of disease or
Weakness
Fatigue
Acute lameness
Salivations and vesicles





- REGULATION (EU) 2016/429 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law')

31.3.2016

EN

Official Journal of the European Union

L 84/1

I

(Legislative acts)

REGULATIONS

REGULATION (EU) 2016/429 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 9 March 2016

on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law')

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 43(2), Article 114 and Article 168(4)(b) thereof,

Having regard to the proposal from the European Commission,



COMMISSION
IMPLEMENTING
REGULATION (EU)
2018/1882 of 3 December
2018 on the application of
certain disease prevention
and control rules to
categories of listed
diseases and establishing
a list of species and
groups of species posing a
considerable risk for the
spread of

- those listed diseases

4.12.2018

EN

Official Journal of the European Union

L 308/21

COMMISSION IMPLEMENTING REGULATION (EU) 2018/1882

of 3 December 2018

on the application of certain disease prevention and control rules to categories of listed diseases and establishing a list of species and groups of species posing a considerable risk for the spread of those listed diseases

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health ('Animal Health Law') ⁽¹⁾, and in particular Articles 8(2) and 9(2) thereof,

Whereas:

- (1) Regulation (EU) 2016/429 lays down rules for the prevention and control of diseases which are transmissible to animals or humans, including rules for the prioritisation and categorisation of listed diseases that are of concern at Union level. Article 5 of Regulation (EU) 2016/429 provides that disease-specific rules for the prevention and control of diseases apply to the listed diseases, as referred to in that Article and in Annex II to that Regulation. Annex II to Regulation (EU) 2016/429 was amended by Commission Delegated Regulation (EU) 2018/1629 ⁽²⁾, and those amendments apply from 21 April 2021.

EU – Regulation



COMMISSION DELEGATED REGULATION (EU) 2020/687 of 17 December 2019 supplementing Regulation (EU) 2016/429 of the European Parliament and the Council, as regards rules for the prevention and control of certain listed diseases

L 174/64

EN

Official Journal of the European Union

3.6.2020

COMMISSION DELEGATED REGULATION (EU) 2020/687

of 17 December 2019

supplementing Regulation (EU) 2016/429 of the European Parliament and the Council, as regards rules for the prevention and control of certain listed diseases

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Regulation (EU) 2016/429 of the European Parliament and of the Council of 9 March 2016 on transmissible animal diseases and amending and repealing certain acts in the area of animal health (the 'Animal Health Law') ⁽¹⁾, and in particular Article 47(1), Article 53(2), Article 54(3), Article 55(2), Article 58(2), the first paragraph of Article 63, Article 64(4), the first paragraph of Article 67, Article 68(3), Article 70(3), Article 72(2), Article 73(3), Article 74(4), Article 76(5), Article 77(2) and Article 272(2) thereof,

Whereas:



- ‘category A disease’: means a listed disease that does not normally occur in the Union and for which immediate eradication measures must be taken as soon as it is detected, as referred to in Article 9(1)(a) of Regulation (EU) 2016/429;

ANNEX

TABLE REFERRED TO IN ARTICLE 2

Name of listed disease	Category of listed disease	Listed species	
		Species and group of species	Vector species
Foot and mouth disease	A+D+E	Artiodactyla, Proboscidea	
Infection with rinderpest virus	A+D+E	Artiodactyla	
Infection with Rift Valley	A+D+E	Perissodactyla, Antilocapridae,	Culicidae



- D – measures for the introduction and spreading of disease
- E – surveillance
- Awareness programs
- Preparedness (CP and sim-ex)

Measures in the event of suspicion



- **isolate** all animals suspected;
- keep the manure, including litter and used bedding, and any product, material or substance likely to be contaminated **isolated and protected** from insects and rodents, kept animals
- implement the appropriate additional **biosecurity** measures to avoid any risk of spread
- **cease all movements** of kept animals of listed species from or to the establishment
- **prevent non-essential movements** of animals of non-listed species, products, materials, substances, persons and means of transport from or to the establishment
- ensure that production, health and traceability **records are updated**
- follow any **instructions** given by the competent authority

Measures in event of suspicion



- **official veterinarians** carry out a **clinical examination** of a representative sample of the kept animals of listed species for the listed disease in question
- **official veterinarians** take appropriate **samples** from those kept animals of listed species and other samples for examination in laboratories designated for that purpose by the competent authority



Measures in event of suspicion



- **prohibition** of movements of kept animals
- prohibition of movements of kept animals of non-listed species;
- prohibition of movements of any product, material or substance likely to be contaminated
- isolation of kept animals
- prohibition of killing of animals of listed species, unless authorized by the competent authority
- prohibition of non-essential movements of products, materials, substances, persons and means of transport into the establishments
- inventory, check or records,
- temporary restricted zone

Measure in even of official confirmation



- declare the affected establishment as **officially infected**
- establishing the **restriction zone**
- implement the **CP and OM**
- implement **control measures**



Measure in even of official confirmation



- **all animals** of listed species kept in the affected establishment shall be **killed** as soon as possible on the spot, within the establishment, in such a way as to avoid any risk of spreading the disease agent during and after killing
- all appropriate and necessary **biosecurity** measures shall be taken to avoid any **possible spread** of the disease to unaffected kept or wild animals or to humans
- bodies or parts of kept animals of listed species which have died or which have been killed shall be **safely disposed**
- all **potentially contaminated** products, materials or substances present in the establishment shall be **isolated until disposed, processed or cleaned and disinfected**
- **cleaning and disinfection, control of insects and rodents**
- establishing of **epidemiological links** (movement of and on)

Restriction zone



- Protection zone
- Surveillance zone
- Restriction zone
- Further zone
- Derogation
- Inventory
- Control of movement

3.6.2020

EN

Official Journal of the European Union

L 174/123

ANNEX V

MINIMUM RADIUS OF PROTECTION AND SURVEILLANCE ZONES

(as referred to in Article 21 of this Regulation)

Indicated as radius of a circle centred on the establishment

Category A diseases	Protection Zone	Surveillance Zone
Foot and mouth disease	3 km	10 km
Infection with rinderpest virus	3 km	10 km
Infection with Rift Valley fever virus	20 km	50 km
Infection with lumpy skin disease virus	20 km	50 km

Measure establishments in protection zone



- keep animals of listed species **separate**,
- to implement **additional surveillance** in order to identify any further spreads, including any increased morbidity or mortality or significant drop in production
- immediately **notification** to the CA,
- means of **controlling insects and rodents**,
- means of **biosecurity** at the entrances and exits of the establishment,
- **biosecurity** measures on farm, movement of persons and means of transport,
- keep **records** of all persons visiting the establishment,
- **safe disposal** of entire bodies or parts of dead or killed kept animals of listed species,

Measure in protection zone



- Visit all holdings with listed disease,
 - Document check,
 - Verification of the implementation of measures,
 - Clinical examination,
 - Collecting samples,

Prohibition, mitigating treatment and derogations



ANNEX VI

PROHIBITIONS IN THE RESTRICTED ZONE

(as referred to in Article 27 of this Regulation)

Table: Prohibitions of activities concerning animals of listed species and products from those animals

PROHIBITIONS OF ACTIVITIES CONCERNING ANIMALS AND PRODUCTS	FMD (*)	RP	RVFV	LSD	CBPP	SPGP	PPR	CCPP	CSF	ASF	AHS	GLAND	HPAI	NCD
Movements of kept animals of listed species from establishments in the restricted zone	X	X	X	X	X	X	X	X	X	X	X	NA	X	X
Movements of kept animals of listed species to establishments in the restricted zone	X	X	X	X	X	X	X	X	X	X	X	NA	X	X
Restocking of game animals of listed species	X	X	X	X	X	X	X	X	X	X	X	NA	X	X
Fairs, markets, shows and other gatherings of kept animals of listed species including collection and dispersion of those species	X	X	X	X	X	X	X	X	X	X	X	NA	X	X
Movements of semen, oocytes and embryos obtained from kept animals of listed species from establishments in the restricted zone	X	X	X	X (*)	X	X	X	X	X	X	X	NA	NA	NA
Collection of semen, oocytes and embryo from kept animals of listed species	X	X	X	X	X	X	X	X	X	X	NP	NA	NA	NA
Itinerant artificial insemination of kept animals of listed species	X	X	X	X	X	X	X	X	X	X	X	NA	NA	NA
Itinerant natural service of kept animals of listed species	X	X	X	X	X	X	X	X	X	X	X	NA	NA	NA
Movements of hatching eggs from establishments in the restricted zone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	X	X
Movements of fresh meat excluding offal from kept and wild animals of listed species from slaughterhouses or game handling establishments in the restricted zone	X	X	X	NP	NP	X	X	NP	X	X	NP	NA	X	X

Measure in surveillance zone



- Same as in the protection zone in respect of
 - Measures on the establishment of the listed species
 - Visits by the VD
 - Prohibition, mitigation treatment
 - Derogation less restrictive

Lifting of restriction



- Protection zone - 21 + 9 days
 - preliminary cleaning and disinfection,
 - control of insects and vectors,
 - favorable results from the visit
 - addition period measures as for surveillance zone
- Surveillance zone - 30 days
 - Measures in the protection zone are met and
 - favourable results from the visits

Repopulation



- final cleaning and disinfection and control of pests, 21 days or
- 3 months after risk assessment if there was no final cleaning and disinfection
- animals meet specific requirements
- samples are collected before repopulation
- for repopulation sentinel animals could be used

Measures in wild animals



- **Investigation** of suspicion
- Collecting **samples**
- **Safe disposal** of carcasses or any other materials and substances
- **Infected zone**, ban of movement, biosecurity measures, hunting, feeding
- **Communication** of measures, vets, hunters other stakeholders
- **Eradication plan**



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THANK YOU FOR YOUR ATTENTION

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