



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

## **Training: Significant disease for TCc**

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# Content



- Legal base overview
- Foot and mouth disease
- Sheep and goat pox
- PPR
- Lumpy skin disease
- Bluetongue
- Brucellosis



# Legal framework



The categories of listed diseases for the listed species and groups of listed species referred to in the table-Regulation (EU) 2018/1882

<i>Name of listed disease</i>	<i>Category of listed disease</i>	<i>Listed species</i>	
		<i>Species and group of specie</i>	<i>Vector species</i>
<i>Foot and mouth disease (FMD)</i>	A+D+E	Artiodactyla, Proboscidea	
<i>Sheep pox and goat pox (S&amp;GP)</i>	A+D+E	Ovis ssp., Capra ssp	
<i>Infection with peste des petits ruminants virus (PPR)</i>	A+D+E	Ovis ssp., Capra ssp., Camelidae, Cervidae	
<i>Lumpy skin disease (LSD)</i>	A+D+E	Bison ssp., Bos ssp., Bubalus ssp.	Haemato phagous arthropo ds

# Legal framework



Name of listed disease	Category of listed disease	Listed species	
		Species and group of specie	Vector species
<i>Brucellosis</i> Infection with <i>Brucella abortus</i> , <i>B. melitensis</i> , <i>B. suis</i>	B+D+E	Bison ssp., Bos ssp., Bubalus ssp., Ovis ssp., Capra ssp.	
	D+E	Artiodactyla others than Bison ssp., Bos ssp., Bubalus ssp., Ovis ssp., Capra ssp.	
	E	Perissodactyla, Carnivora,	
<i>Bluetongue</i> Infection with bluetongue virus (serotypes 1-24)	C+D+E	Antilocapridae, Bovidae, Camelidae, Cervidae, Giraffidae, Moschidae, Tragulidae	Culicoides spp.

# Legal framework



Name of listed disease	Category of listed disease	Listed species
		Species and group of specie
<i>Highly pathogenic avian influenza (HPAI)</i>	A+D+E	Aves
<i>Infection with Newcastle disease virus (ND)</i>	A+D+E	Aves



## Most important sheep and goat diseases

### Group A diseases

- ✓ Foot and mouth disease
- ✓ Sheep and goat pox
- ✓ PPR
- ✓ Lumpy skin disease
- ✓ HPAI
- ✓ ND

### Group B diseases

- ✓ Brucellosis

### Group C diseases

- ✓ Bluetongue



## Regulation (EU) 2020/689

- Commission Delegated Regulation (EU) 2020/689 as regards **rules for surveillance, eradication programmes, and disease-free status** for certain listed and emerging diseases

## Regulation (EU) 2020/687

- Commission Delegated Regulation (EU) 2020/687 as regards rules for **the prevention and control of certain listed diseases**



- Highly contagious viral diseases
- Significant economic impact
- Rapid, high level of transmission, virus shed in saliva, breath, milk, skin vesicles, urine, faeces
- Similar diagnostic method
- Similar disease prevention and control measures
- Stamping out method for the control of diseases.
- No treatment
- Not zoonotic diseases



# Category A diseases



## Economic impact

- Direct costs
  - Economic losses to farmers and producers
  - Costs of eradication
  - Prevention
- Indirect costs
  - Trade restriction
  - Farm income lost
  - Consumer fears
- Major economic importance due to loss of production
  - Farmers
  - Industry
  - Depending industry

# Category A diseases



## Transmission and spread

- ✓ respiratory or oral routes
- ✓ direct contact
- ✓ vectors
- ✓ iatrogenic
- ✓ excretions and secretions
- ✓ contaminated products and fomite such as;
  - transport vehicles,
  - animal products
  - hay, compound feed, water
  - clothing, footwear,
  - or equipment



## Risk consideration

- Animal movements
- Farmers, workers movement
- Contact holdings
- Animals grazing common land with infected place stock
- Any market, dealer or abattoir connected to infected place during risk period
- Movement of veterinarians or livestock technicians or dealers
- Movement of milk tanker and feed deliveries
- Wild animals
- Other pest

# FMD - Food and mouth disease



- **VIRAL disease** : family Picornaviridae, genus Aphthovirus
- **WIDE hosts** : cattle, sheep, pigs, goats, other cloven-hoofed animals
- **HIGH Morbidity/LOW Mortality**
- **Transmission dynamics:** rapid, high level of transmission
- **Patterns of viral shedding:** Virus shed in saliva, breath, milk, skin vesicles, urine, faeces etc.
- **Virus can survive in environment for long periods**
- It was the **first disease** for the OIE established official status recognition

# FMD Clinical signs



- **incubation period:** 2-14 days.
- **Morbidity:** up to 100% in susceptible populations.
- **Mortality:** adult animals (1-5%), but higher in young calves, lambs and piglets (20% or higher).



# FMD Clinical signs



- The typical clinical signs are the occurrence of blisters or vesicles on nose, tongue or lips, inside the oral cavity, between the toes, above the hooves, teats,
- fever, depression, hypersalivation, loss of appetite, weight loss, decrease in growth, decrease in milk yield,
- lameness and reluctance to move or eat
- Death due to a multifocal myocarditis



# Sheep and Goat Pox



- **VIRAL disease:** genus Capripoxvirus in the family Poxviridae.
- **WIDE hosts :** only sheep and goats,
- **HIGH Morbidity/HIGH Mortality**
- **Transmission dynamics:** rapid, high level of transmission
- **Patterns of viral shedding:** Virus shed in shed in saliva, nasal and conjunctival secretions, inhalation, all secretions, excretions, the scabs from skin lesions, close contact etc.



# Clinical signs S&GP



- **Morbidity** from 1% to 70-90% in fully susceptible flock
- **Overall mortality rate** is often less than 10%, it sometimes exceeds 50%,
- **Mortality** up to 100% in highly susceptible young animals
- Only sheep and goats affected
- Subclinical cases
- No chronic carriers
- Not seen in wild ungulates





# Clinical Signs



- Incubation period: 8 to 13 days
  - Fever
  - Conjunctivitis
  - Depression, anorexia
  - Dyspnea, nasal or ocular discharge
  - Secondary bacterial infections are common



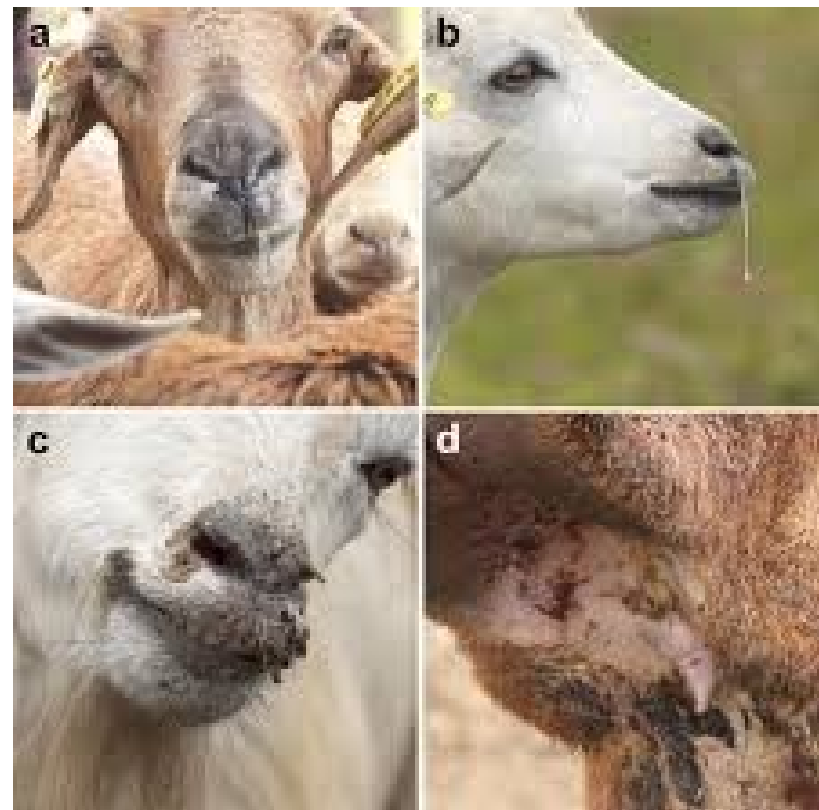
# Clinical Signs



- Papules forming into hard scabs
- Lesions may cover body or be restricted to axilla, perineum and groin, ears, or tail
- Death may occur at any stage



- **VIRAL disease:** morbillivirus
- **WIDE hosts :** primarily a disease of sheep  
and goats, gazelle, deer, ibex, gemsbok
- **HIGH Morbidity/HIGH Mortality**
- **Transmission dynamics:** rapid, high level of transmission
- **Patterns of viral shedding:** Virus shed in in nasal and ocular secretions, saliva, urine and feces, milk, aerosol transmission and close contact etc.





# Clinical signs - PPR



- Young animals most affected
  - Ages 2 months to 2 years
- Varies by species, immunity, breed
- Morbidity and mortality rates
  - **Up to 100%** in naive herds
  - Lower in endemic areas





- Incubation period
  - 2 to 10 days
- Per acute
- Acute
  - High fever
  - Serous nasal, ocular discharge becomes mucopurulent
  - Hyperemic gums, necrotic oral lesions
- Profuse diarrhea
  - Dehydration
  - Emaciation
- Rapid respiration, dyspnea
- Abortion
- Skin nodules around muzzle
- Subacute, asymptomatic disease

# LSD – Lumpy skin disease



- **VIRAL disease** : family Poxviridae, genus Capripoxvirus
- **WIDE hosts** : cattle and water buffalo
- **LOW Morbidity/LOW Mortality**
- **Transmission dynamics:** vector borne, rapid, high level of transmission
- **Patterns of viral shedding:** skin nodules, scabs and crusts, virus is isolated from blood, saliva, ocular and nasal discharge, and semen
- Virus can **survive** in environment for long periods

- Morbidity
  - Widely variable
  - 10% to 20%
- Mortality
  - Usually low
  - 1% to 5%



Primary transmission route: **biting insects**



# Clinical Signs



- Incubation period
  - 2 to 5 weeks
- Inapparent to severe infection
  - Young calves most susceptible
- Nodule development
- Decreased milk yield





# Clinical Signs



- Raised, circular, firm, coalescing nodules
- Secondary bacterial infections
- Rhinitis, conjunctivitis
- Lameness
- Abortion and sterility



# BT - Bluetongue



- **VIRAL disease** : family Reoviridae, genus Orbivirus
- **WIDE hosts** : sheep, goats, cattle, buffaloes, deer, most species of African antelope and camels.
- **HIGH Morbidity/LOW Mortality**
- **Transmission dynamics:** vector borne, rapid, high level of transmission
- **Patterns of viral shedding:** infected vector, blood semen
- **27 serotypes worldwide**
- **Persistence of the virus in the environment depend on the distribution an abundance of vectors**



- Incubation period: 4 to 8 days
- Most asymptomatic
- Oral erosions and ulcerations
- Tongue
  - Swollen, protruding
  - Cyanotic  
= “blue-tongue”
- Reproductive problems
- Severity of disease varies
  - Breed
  - Strain of virus
  - Environmental stress
- Morbidity
  - As high as 100%
- Mortality
  - Usually 0 to 30%

- Coronitis
  - Inflammation of coronary band



- Lameness
  - Painful hooves



# Brucellosis



- **Bacterial disease** : Brucellosis in cattle (*B. abortus*) in sheep and goats (*B. melitensis*) and in swine (*B. suis*)
- **WIDE hosts** : cattle, swine, sheep and goats, camels, equines, and dogs
- **Transmission dynamics**: typically spread when the animal aborts or gives birth
- **Patterns of viral shedding**: birth fluids of an infected animal, bacteria also colonise the udder and contaminate the milk.
- **Persistence**: bacteria can survive outside the animal in the environment for several months, particularly in cool moist conditions.

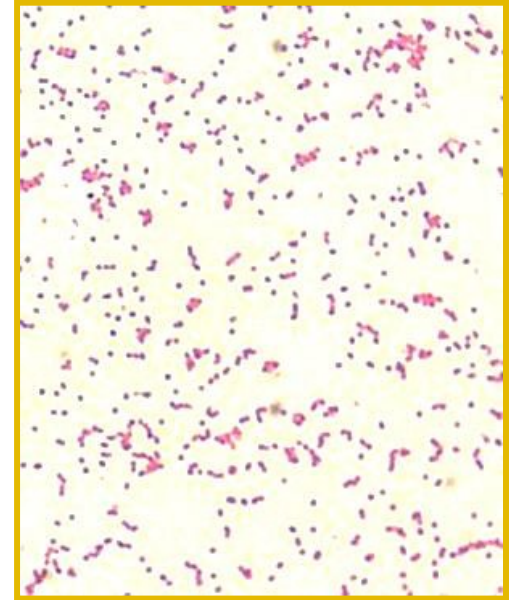


- Incubation: prolonged period
- Very mild, most common
  - Arthritis, epididymitis - orchitis, chronic fatigue
- Swelling of the neck or back in horses
- Abortions
- Other reproductive symptoms
  - infertility, retention of placenta, stillbirth or birth of weak offspring.



## Why Brucellosis is important?

- An **important zoonosis**
- Economic losses



# Populations at Risk



- Occupational disease
  - Cattle ranchers/dairy farmers
  - Veterinarians
  - Abattoir workers
  - Meat inspectors
  - Lab workers
- Travelers
- Consumers
  - Unpasteurized dairy products





# HPAI – Highly pathogenic Avian Influenza

- **VIRAL disease** : e family Orthomyxoviridae and
- placed in the genus Alphainfluenzavirus (Influenzavirus A or influenza A virus)
- **WIDE hosts** : domestic and wild birds (infect mammals, such as rats, mice, weasels, ferrets, pigs, cats, tigers, dogs and horses)
- **HIGH Morbidity/HIGH Mortality**
- **Transmission dynamics**: direct contact with secretions from infected birds, especially through faeces or through contaminated feed and water.
- **Patterns of viral shedding**: faeces and respiratory secretions,
- **HPAI and LPAI**

# Morbidity and Mortality



- Domesticated poultry
  - HPAI morbidity and mortality rates approach 90-100%
- Wild birds
  - asymptomatic (migratory wild birds, especially waterfowls, are the natural host and reservoir of avian influenza viruses)
  - severe mortality rates



# Clinical sings



- Incubation: few hours to a few days, up to 2 weeks
- Sudden death
- Drop in egg production
- Reduced feed and water intake
- Neurological signs
- Depression, anorexia, ruffled feathers
- Combs swollen, cyanotic
- Conjunctivitis and respiratory signs
- Most birds in an affected flock die

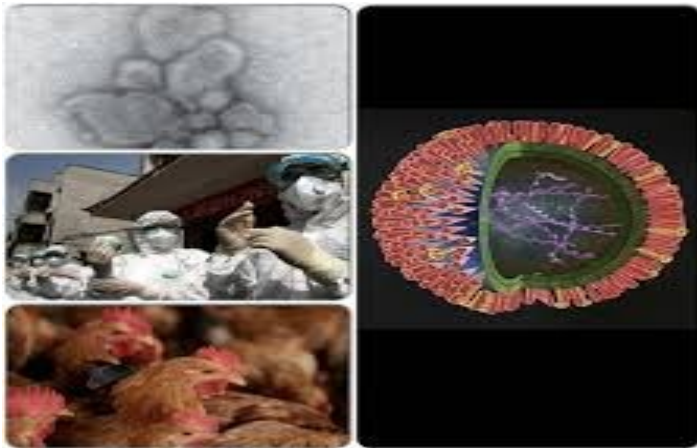


# Poultry diseases-HPAI



## Why is HPAI important?

- An **important zoonosis**
- High mortality
- High economic losses



# ND - Newcastle disease



- **VIRAL disease** : family of paramyxoviruses
- **WIDE hosts** : domestic and wild birds
- **Lentogenic or mild/mesogenic or moderate/velogenic or very virulent**
- **Transmission dynamics**: very contagious, transmitted through feces and respiratory discharges or by contaminated food, water, equipment, and human clothing
- **Patterns of viral shedding**: virus is present in all parts of the carcass of an infected bird



# Morbidity/Mortality



- Morbidity: up to 100%
- Mortality: 90%
- Varies greatly depending on
  - Virulence and strain
  - Avian species and susceptibility of host
  - Environmental conditions
  - Vaccination history
- Some species show few or no signs
  - Carrier state may exist



# Clinical Signs



- Drop in egg production
- Numerous deaths within 24 to 48 hours
- Deaths continue for 7 to 10 days
- Surviving birds may have neurological or reproductive damage
- Edema of head, especially around eyes
- Greenish, dark watery diarrhea
- Respiratory and neurological signs
- Signs vary with species and virulence





What is most important for the contagious diseases?

What is important for the veterinary service ?

**To recognize and  
notify the disease !!!**



# Group A diseases



Who should I contact if I suspected category A disease ?

**Contact your veterinarian  
immediately!!!  
Veterinary services!!!**



# Category A diseases



Radius of restriction zones  
(as referred (EU) 2020/687)

<i>Category A diseases</i>	<i>Protection Zone</i>	<i>Surveillance Zones</i>	<i>Monitoring period</i>
<i>Foot and mouth disease</i>	3km	10km	21 days
<i>Sheep and goat pox</i>	3km	10km	21 days
<i>PPR</i>	3km	10km	21 days
<i>LSD</i>	20km	50km	28 days
<i>HPAI</i>	3km	10km	21 days
<i>ND</i>	3km	10km	21 days

# Group A diseases



## PROHIBITIONS IN THE RESTRICTED ZONE

(Regulation 2020/687)

### *Prohibitions of activities concerning animals and products*

	FMD	S&GP	PPR	LSD
Movements of kept animals of listed species from establishments in the restricted zone	X	X	X	X
Movements of kept animals of listed species to establishments in the restricted zone	X	X	X	X
Restocking of game animals of listed species	X	X	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

# Group A diseases



## *Prohibitions of activities concerning animals and products*

	FMD	S&GP	PPR	LSD
Movements of semen, oocytes and embryos obtained from kept animals of listed species from establishments in the restricted zone	X	X	X	X*
Collection of semen, oocytes and embryo from kept animals of listed species	X	X	X	X
Itinerant artificial insemination of kept animals of listed species	X	X	X	X
Itinerant natural service of kept animals of listed species	X	X	X	X

*(\*) only oocytes and embryo.*

# Group A diseases



## ***Prohibitions of activities concerning animals and products***

Movements of fresh meat excluding offal from kept and wild animals of listed species from slaughterhouses or game handling establishments in the restricted zone

Movements of offal from kept and wild animals of listed species from slaughterhouses or game handling establishments in the restricted zone

Movements of meat products obtained from fresh meat of listed species from establishments in the restricted zone

<b>FMD</b>	<b>S&amp;GP</b>	<b>PPR</b>	<b>LSD</b>
X	X	X	NP
X	X	X	X
X	NP	X	NP

*NA = Not applicable. X= Prohibition. NP= Not Prohibited*

# Group A diseases



## Prohibitions of activities concerning animals and products

Movement of raw milk and colostrum obtained from kept animals of listed species from establishments in the restricted zone

Movement of dairy products and colostrum based products from establishments in the restricted zone

FMD	S&GP	PPR	LSD
X	X	X	X
X	X	X	X

NA = Not applicable. X= Prohibition. NP= Not Prohibited.



# Group A diseases



<i>Prohibitions of activities concerning animals and products</i>	<i>FMD</i>	<i>S&amp;GP</i>	<i>PPR</i>	<i>LSD</i>
Movement of manure, including litter and used bedding from kept animals of listed species from establishments in the restricted zone	X	X	X	X
Movement of hides, skins, wool, bristles and feathers from kept animals of listed species from establishments in the restricted zone	X	X	X	X
Movement of feed material of plant origin and straw obtained in the protection zone (*)	X	NP	NP	NP

NA = Not applicable. X= prohibition. NP= Not Prohibited.

# Category A diseases



## *Prohibitions of activities concerning animals and products*

Movements of kept animals of listed species from establishments in the restricted zone

X

X

Movements of kept animals of listed species to establishments in the restricted zone

X

X

Restocking of game animals of listed species

X

X

Fairs, markets, shows and other gatherings of kept animals of listed species including collection and dispersion of those species

X

X

HPAI

ND

# Legal framework - Group A diseases



## *Prohibitions of activities concerning animals and HPAI ND products*

	HPAI	ND
Movements of hatching eggs from establishments in the restricted zone	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
Movements of offal from kept and wild animals of listed species from slaughterhouses or game handling establishments in the restricted zone	X	X
Movements of meat products obtained from fresh meat of listed species from establishments in the restricted zone	X	X

# Legal framework - Group A diseases



## *Prohibitions of activities concerning animals and products*

	<b>HPAI</b>	<b>ND</b>
Movement of eggs for human consumption from establishments in the restricted zone	X	X
Movement of manure, including litter and used bedding from kept animals of listed species from establishments in the restricted zone	X	X
Movement of hides, skins, wool, bristles and feathers from kept animals of listed species from establishments in the restricted zone	X	X



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# THANK YOU FOR YOUR ATTENTION



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