

# Classical Swine Fever (Hog Cholera) – description and diagnosis

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**Classical swine fever virus**  
**Petechial haemorrhages – larynx**

# Classical Swine Fever (Hog Cholera) – description and diagnosis

- **Disease characteristics**
- **Aetiology**
- **Epidemiology**
  - Susceptible species
  - Distribution – regional and international situation (OIE, CARIVET)
  - Transmission
  - Risk factor of introduction

- **Diagnosis**
  - Clinical
  - Laboratory
  - Pathology
- **Differential diagnoses**
- **Prevention and control**
- **Effects on trade**

# Classical Swine Fever (Hog Cholera) – Definition and Aetiology

**Classical swine fever (CSF)** - also known as hog cholera, is a highly contagious multisystemic, haemorrhagic, viral disease of swine.

- ❖ Genus – PESTIVIRUS
- ❖ Family – *Flaviviridae*
- ❖ Related to BVDV and BDV
- Severity ranges from mild to severe, causing a large number of deaths in affected herds .

# Classical Swine Fever (Hog Cholera) – Epidemiology

**Hosts (susceptible species):** domestic and wild pigs

**Incubation period:** usually 3-4 days (range from 2-14 days)

**Distribution:**

- ❖ much of Asia, Central & South America, parts of Europe and Africa;
- ❖ eradicated from about 16 countries, including Australia, Canada, and the United States (**1978 - after a 16 year long effort**).

# Classical Swine Fever (Hog Cholera) – Epidemiology

## Transmission 1:

- ❖ Feeding raw or insufficiently cooked waste food
- ❖ infected pork scraps can be a potent source of CSFV
  
- ❖ Mechanical vectors can spread CSFV
  - farm visitors - on their person, clothes, vehicles
  - insects and birds.

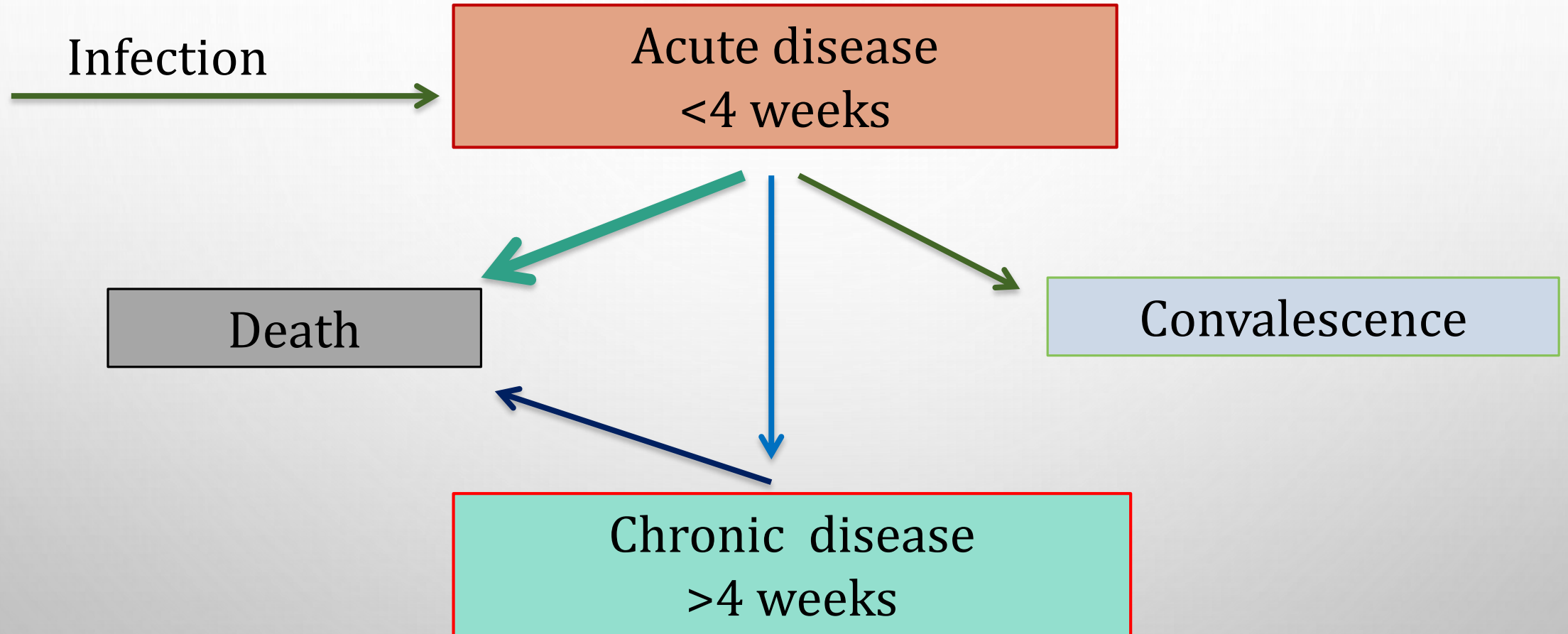


# Classical Swine Fever (Hog Cholera) – Epidemiology

## Transmission 2:

- ❖ Transplacental infection - low virulent strain of CSFV can result in persistent infection (lifelong infection).
- ❖ Persistently shed the virus for months before succumbing to the disease.

# Clinical course of postnatal CSF



# Classical Swine Fever (Hog Cholera) – Forms of the disease

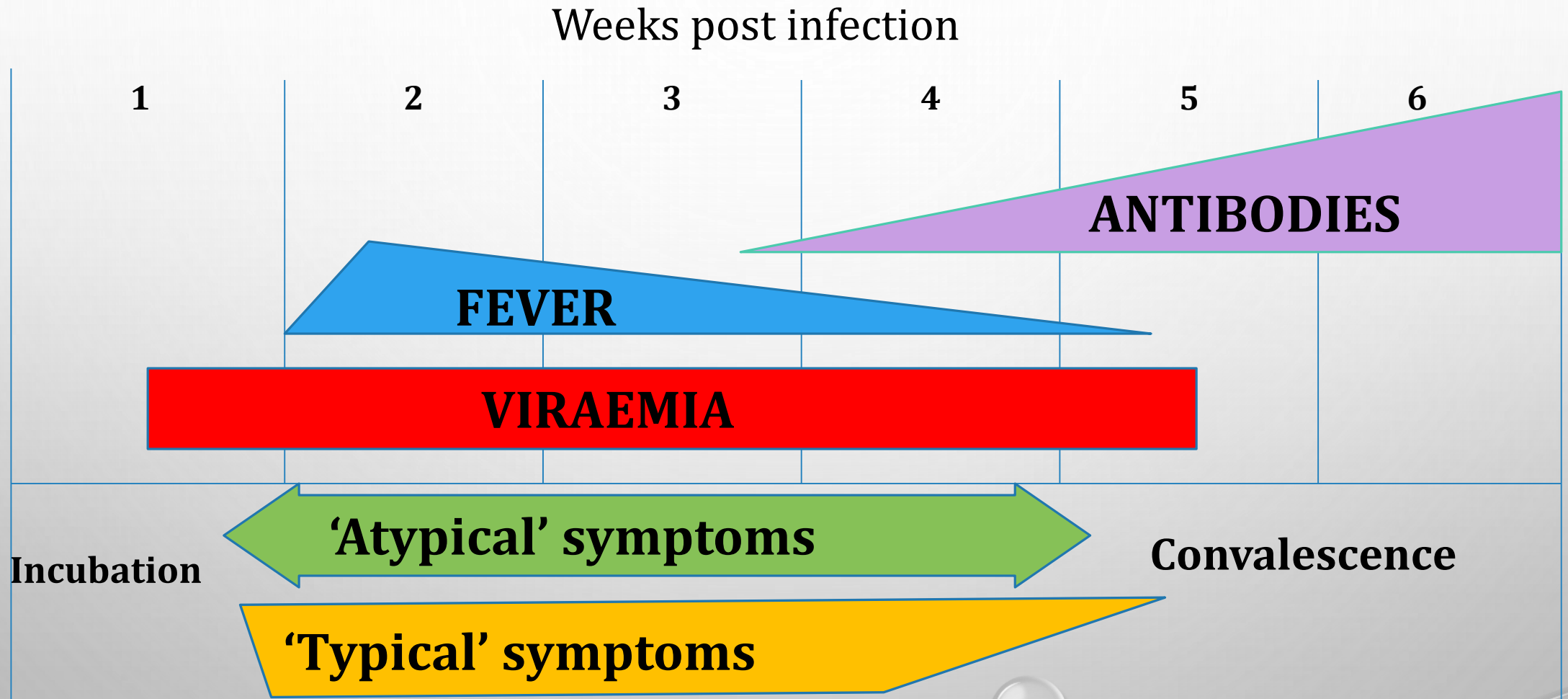
## Acute form(rapid onset)

- ❖ Leucopenia and thrombocytopenia;
- ❖ Widespread **petechiae** and **ecchymoses** (haemorrhagic diathesis, swollen haemorrhagic LN);
- ❖ Multifocal **infarction** of splenic margin;
- ❖ Enlarged haemorrhagic lymph nodes;
- ❖ Encephalomyelitis with perivascular cuffing





# Acute course of CSF



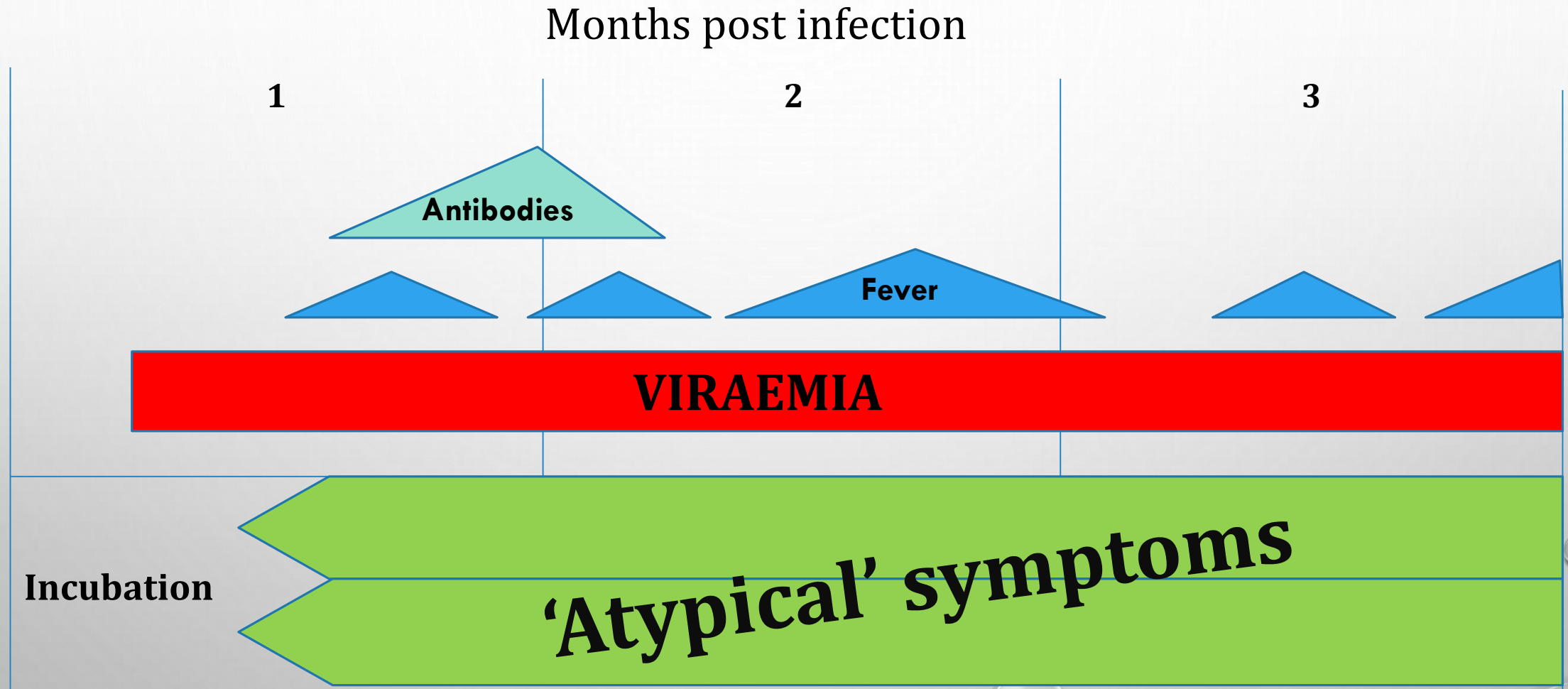
# Classical Swine Fever (Hog Cholera) – Forms of the disease

## Chronic form (slow development)

PI pigs excrete virus – perpetuate infection in herd

- ❖ Button ulcers mainly in the caecum and large intestine;
- ❖ Generalised depletion of lymphoid tissues;
- ❖ **Haemorrhagic and inflammatory lesions are often absent!**

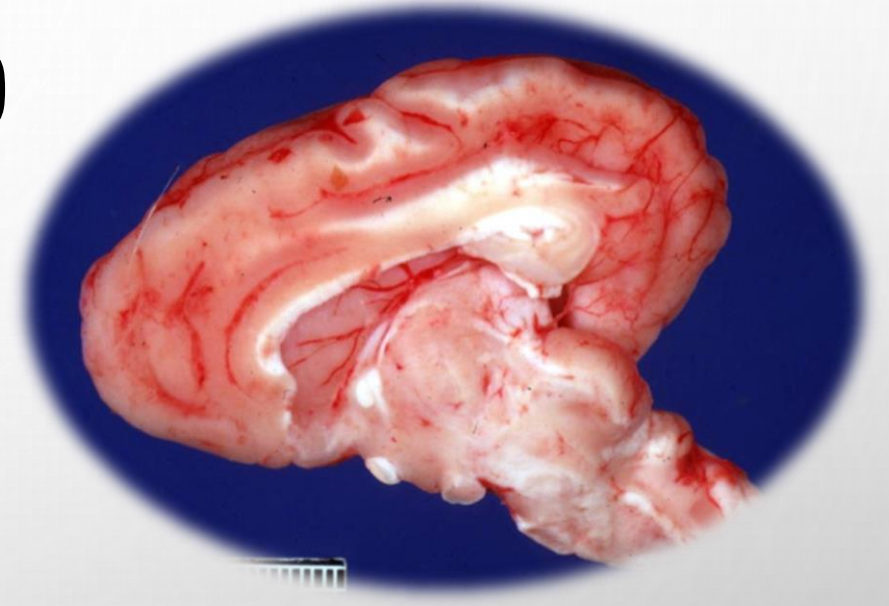
# Chronic course of CSF



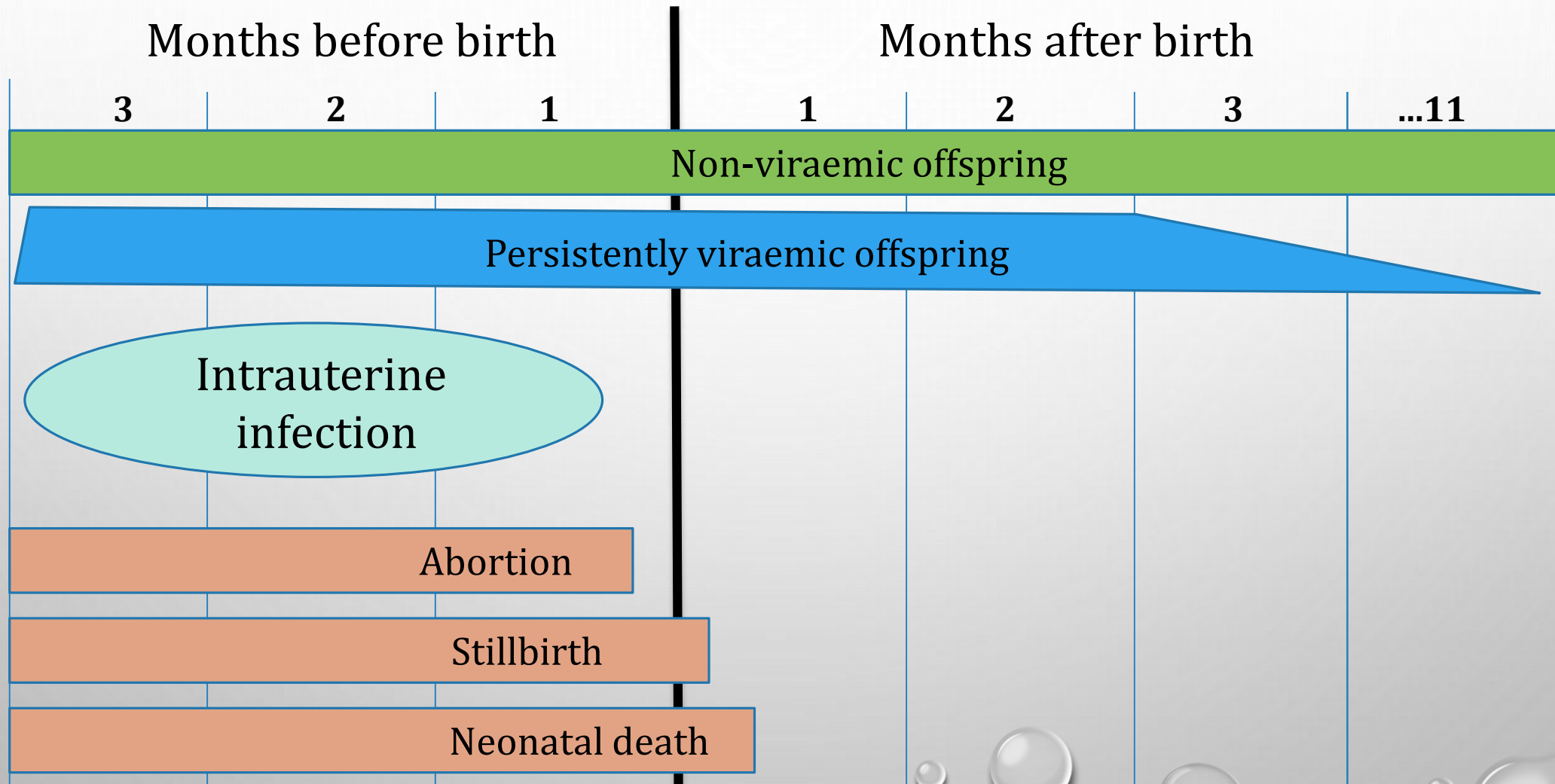
# Classical Swine Fever (Hog Cholera) – Forms of the disease

## Congenital form (foetal development)

- ❖ Cerebellar hypoplasia and Microencephaly;
- ❖ Central dysmyelinogenesis;
- ❖ Pulmonary hypoplasia;
- ❖ Thymic atrophy;
- ❖ Deformities of the head and limbs;
- ❖ Petechial hemorrhages of the skin and internal organs.



# Congenital CSF





# Classical Swine Fever (Hog Cholera) – Diagnosis

Specimens for lab and virus isolation and antigen detection include:

- ❖ tonsils (best);
- ❖ submandibular and mesenteric lymph nodes, spleen;
- ❖ kidney, brain, and distal ileum

*Intra vitam* - collect:

- ❖ tonsil biopsies and blood in EDTA

**DO NOT** freeze samples - interferes with some of the tests

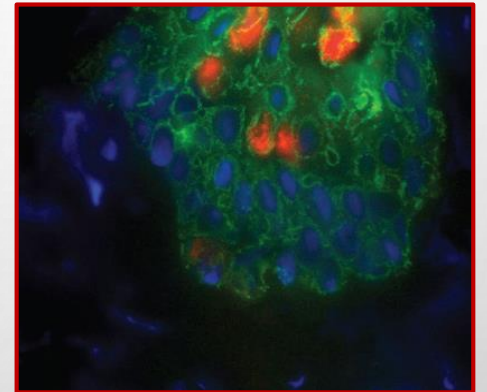
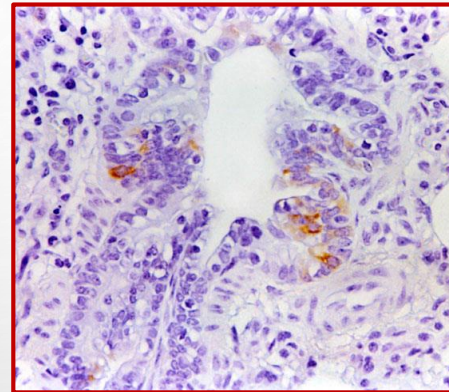
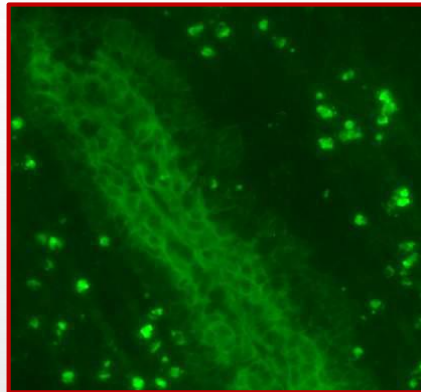
# Classical Swine Fever (Hog Cholera) – Laboratory Diagnosis

❖ Direct IFA on cryostat sections of organs or impression smears of biopsy material;

❖ ELISA - blood antibody test;

❖ RT-PCR;

❖ Comparative neutralization test – **Definitive test**



Virus isolation in cell culture:

❖ Immunoperoxidase or Immunofluorescence – CSFV antibody.

# Classical Swine Fever (Hog Cholera) – Gross Pathological Diagnosis

## The “diagnostic chain”

- Suspicion of a pathological condition (⇒ farmer)
- Visual confirmation of this condition at the farm (⇒ veterinarian)
- On-farm veterinary actions ⇒ diagnostic approach!!!:
  - Diagnostic tools:
    - Clinical history and previous knowledge of the farm
    - ~~Clinical signs observed during the visit (⇒ CLINICAL DIAGNOSIS)~~
    - **NECROPSIES (⇒ PATHOLOGICAL DIAGNOSIS)**
- To establish treatment actions that we believe will work (“DO SOMETHING STRATEGY”)
- If the situation is complex enough, the veterinarian may feel that more analyses should be done and samples from necropsy will be taken and sent to a laboratory



# Classical Swine Fever – Gross path. diagnosis



Recumbent & dead pigs



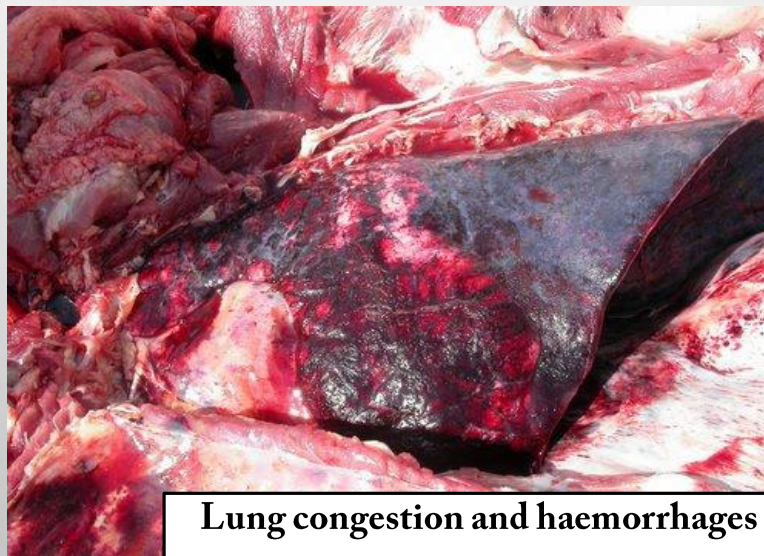
Congested skin



Abortion



Cutaneous haemorrhages



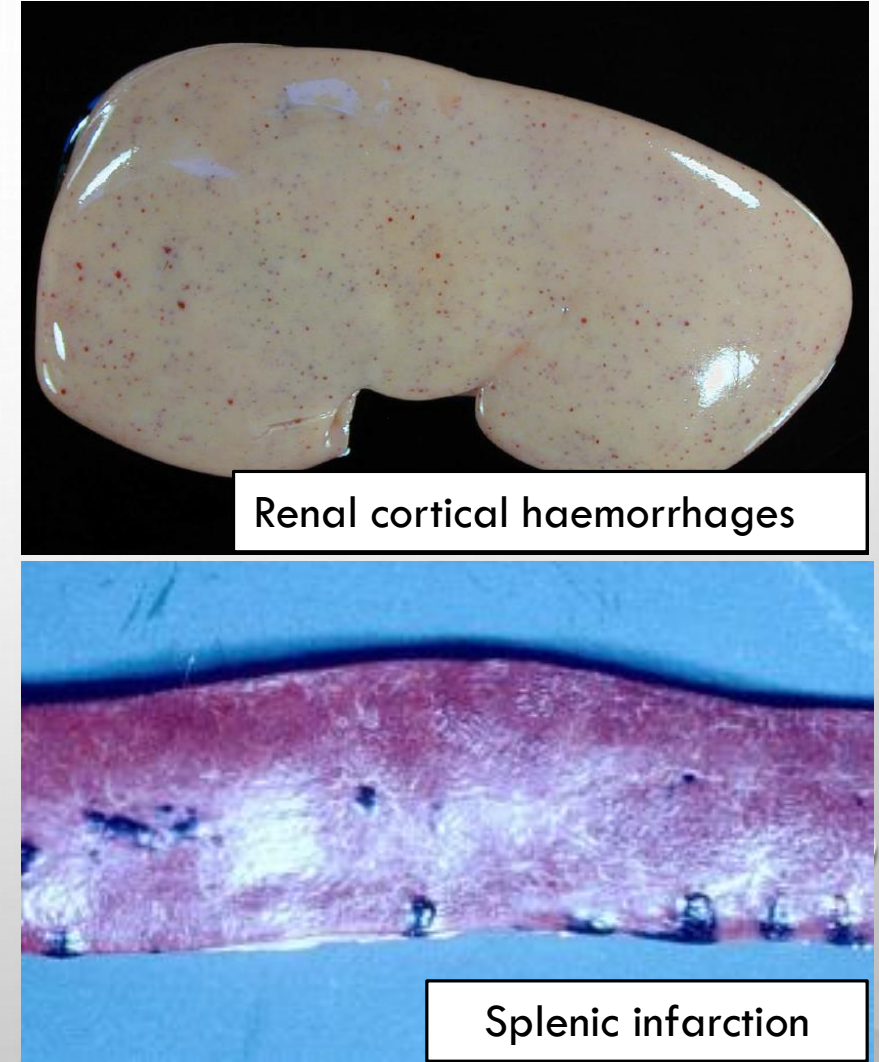
Lung congestion and haemorrhages



Diaphragmatic haemorrhages

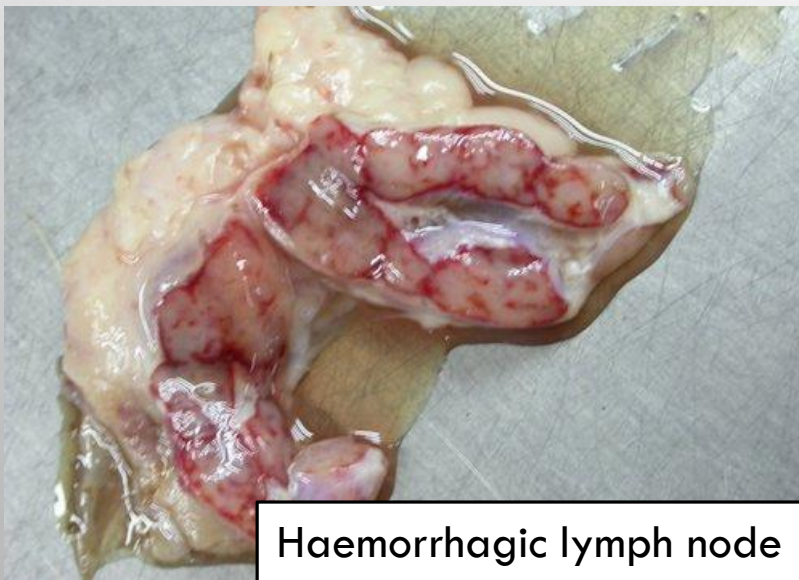
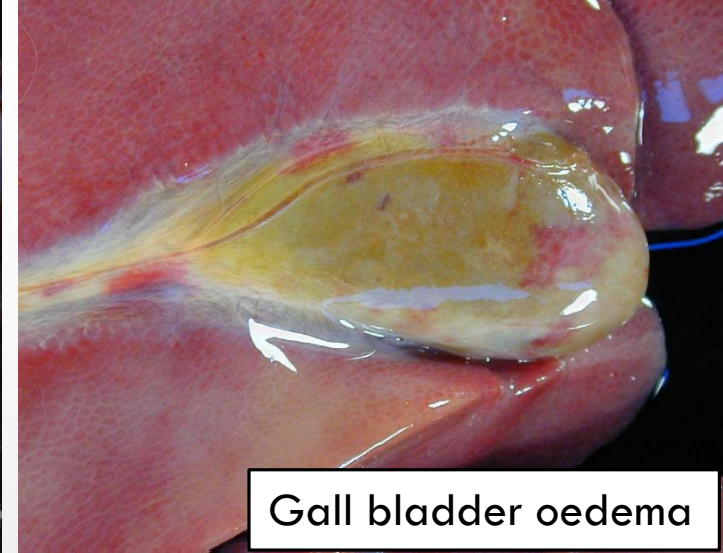
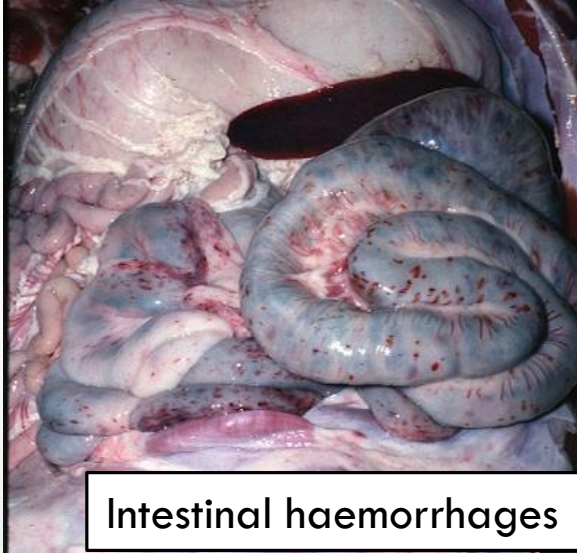
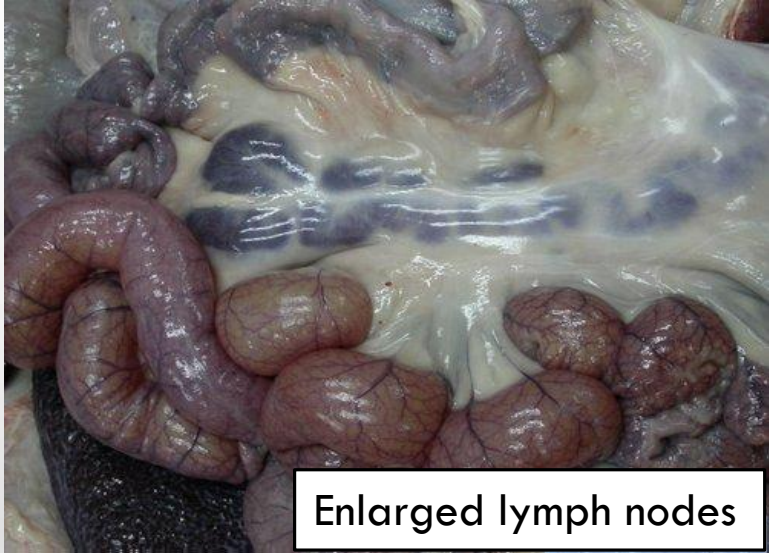


# Classical Swine Fever – Gross path. diagnosis





# Classical Swine Fever – Gross path. diagnosis



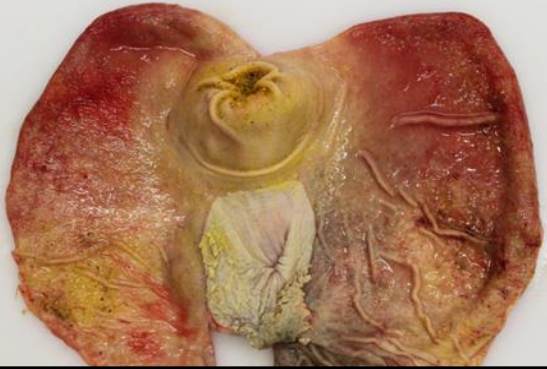
# Classical Swine Fever – Differential diagnoses

- A. African swine fever (DNA virus - Asfivirus, Asfarviridae family)  
*[distinguished from hog cholera only via laboratory examination]*
- B. Acute Porcine Reproductive Respiratory Syndrome (PRRS)
- C. Porcine Dermatitis Nephropathy Syndrome (PDNS)
- D. Erysipelas (*Erysipelothrix rhusiopathiae*)
- E. Glasser's disease (*Haemophilus suis*)
- F. Salmonellosis (*S. cholerae-suis*)
- G. Thrombocytopenic purpura
- H. Warfarin poisoning
- I. Heavy metal toxicity
- J. Infection with BVDV
- K. Leptospirosis

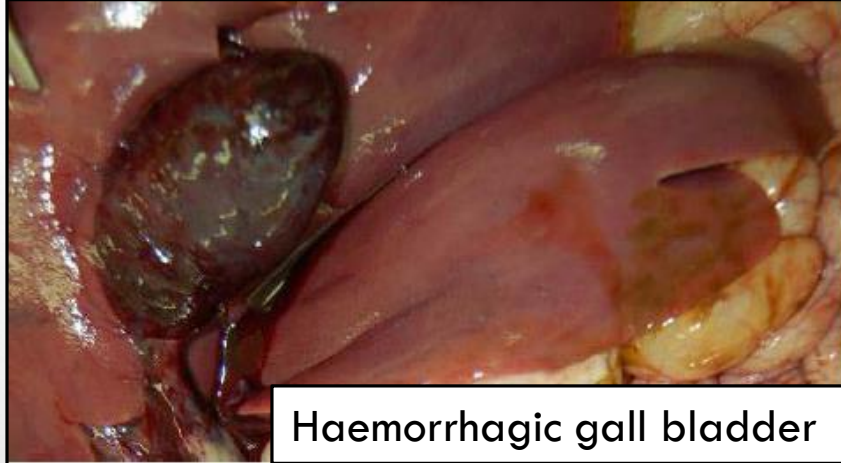


# Classical Swine Fever – Differential diagnosis

## African swine fever



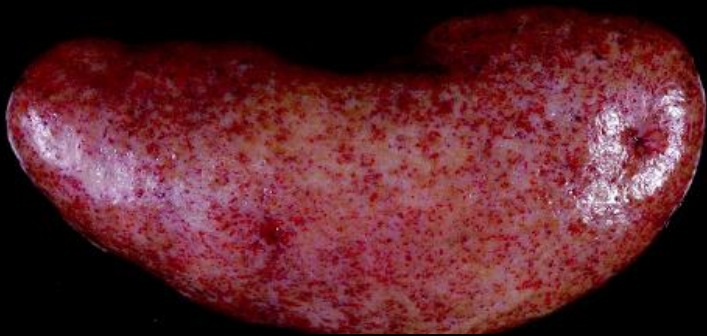
Stomach ulcer with haemorrhage



Haemorrhagic gall bladder



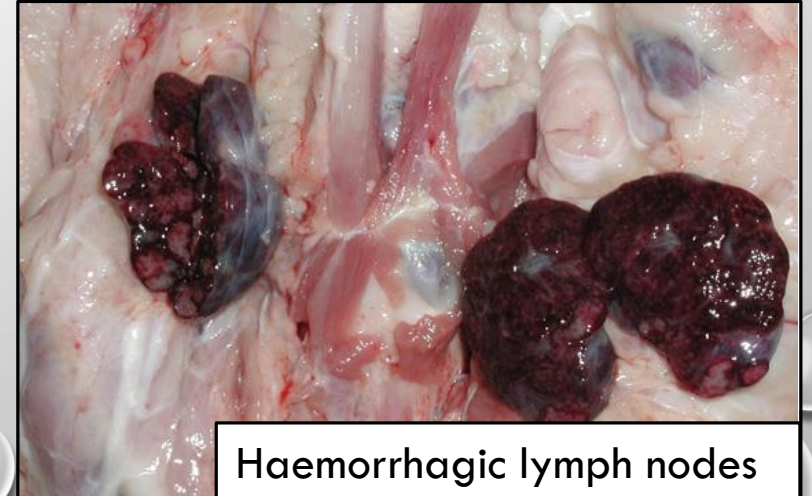
Enlarged spleen



Renal haemorrhages



Intestinal haemorrhage



Haemorrhagic lymph nodes



# Classical Swine Fever – Differential diagnosis

## Acute swine erysipelas



**Skin congestion  
and  
haemorrhages**

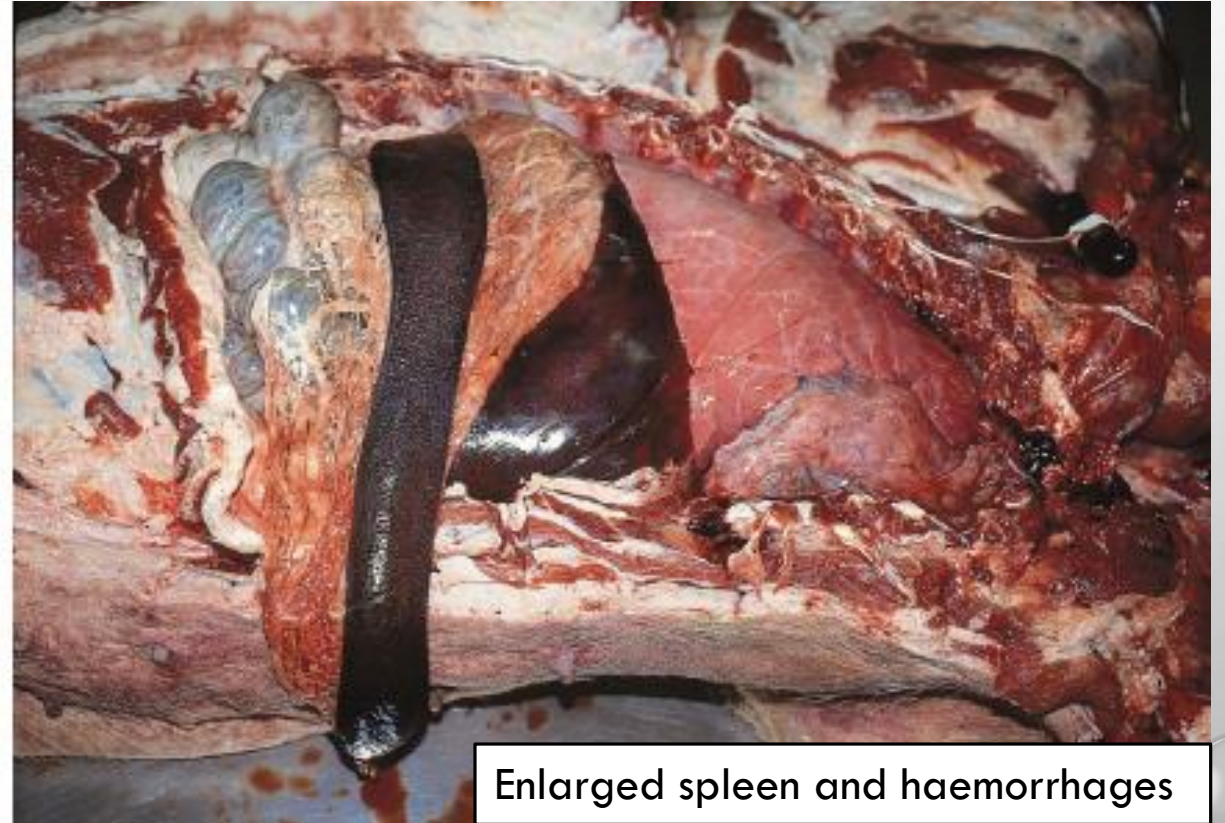


# Classical Swine Fever – Differential diagnosis

## Septicaemic salmonellosis (*S. cholerae-suis*)



Intestinal necrosis and haemorrhages



Enlarged spleen and haemorrhages



# Classical Swine Fever – Differential diagnosis Porcine dermatitis and nephropathy syndrome



# Classical Swine Fever (Hog Cholera) – Prevention and Control

- ❖ Cull affected pigs;
- ❖ Burn or bury carcasses;
- ❖ Vaccination to reduce the number of outbreaks where hog cholera is enzootic;
- ❖ Vaccination generally prohibited in countries free of disease or where eradication is in progress and nearing success;

# Classical Swine Fever (Hog Cholera) – Prevention and Control

## Other prophylactic measures include:

- ❖ Quarantining incoming pigs before introducing them to the herd  
(U.S. quarantines swine imported from affected countries for 90 days);
- ❖ Keep good pig identification and recording system;
- ❖ Structured serological surveillance of breeding sows and boars to detect subclinical infections;
- ❖ Maintain strict import policy for live pigs, fresh and cured pork.

# Classical Swine Fever (Hog Cholera) – Prevention and Control

CSFV can survive processed meat:

- ❖ Smoked pork
- ❖ Cured meat



It survives well in cold temperatures

- ❖ months in refrigerated meat
- ❖ years in frozen meat

## **Inactivation of the virus**

- ❖ High temperature
- ❖ Low and high pH

## **Disinfectants:**

- ❖ Sodium hypochlorite sol.
- ❖ Formaldehyde/gluta.
- ❖ Sodium carbonate

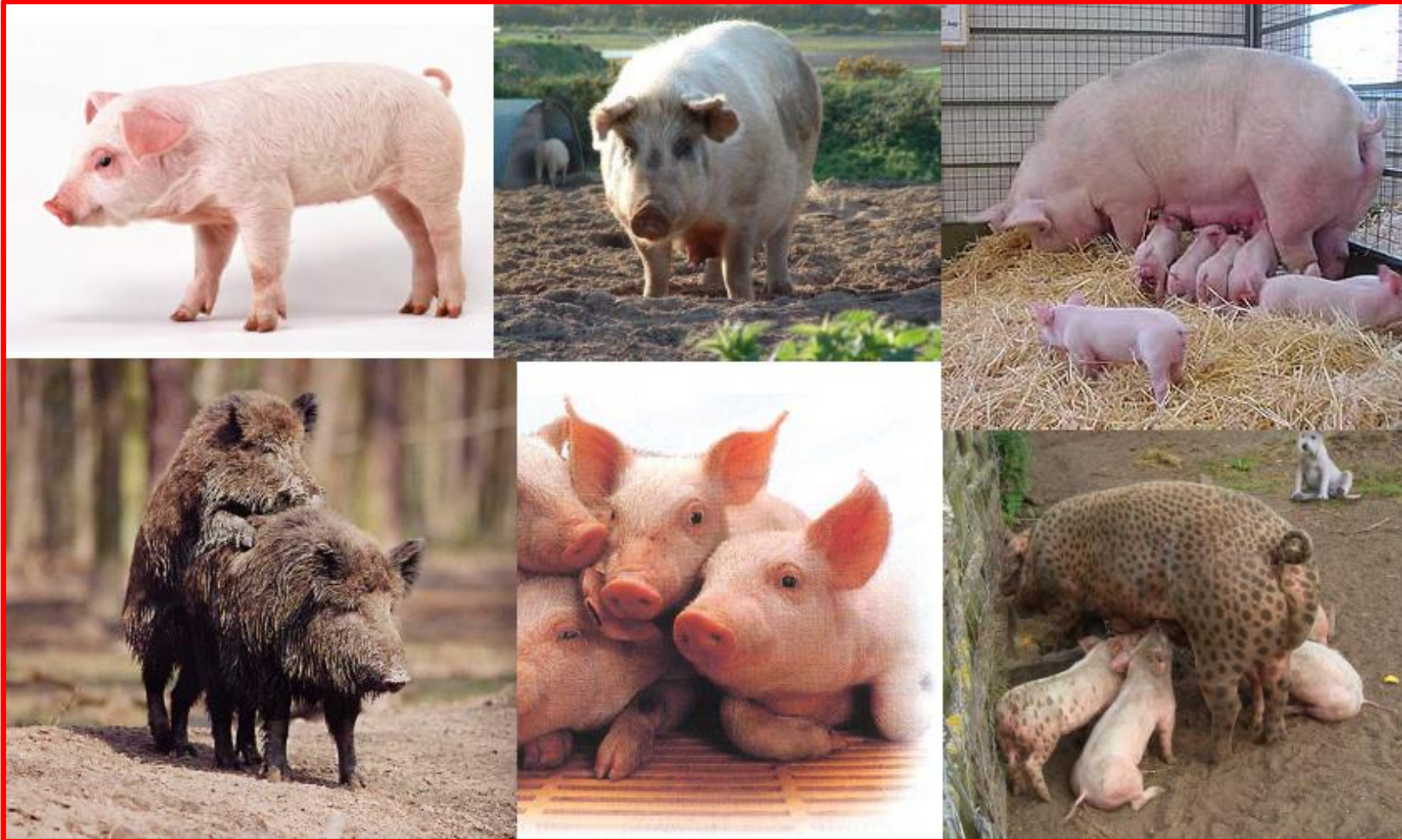


# Classical Swine Fever (Hog Cholera) – Effects on Trade

- ✓ CSF outbreak can significantly affect world trade of pork and pork products
- ✓ Restriction of exports from CSF-infected country;
- ✓ Effects on the economy
- ✓ Regain disease-free status (resuming exports)



# Classical Swine Fever (Hog Cholera) – Questions!



*Thank you  
very much!*