Control of CSF without vaccination in the Netherlands 1997 - 1998

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Introduction

- Case story
- Overview of epidemiology
- Organisation setup
- Activities:.
- AI: spread of CSF by semen
- Breeding ban and killing of young piglets
- Welfare; overstocking in herds. Buying out culling
- Rendering capacity
- Lessons learned

Case story

- **Last infected farm March 6 1998**
- **CSF diagnosed February 4 1997**
- **429 infected herds**
- **EU Directive 80/217:**
  - No vaccination
- **Main instruments:**
  - **Stamping out**
  - **Movement restrictions for:**
    All animals, Manure, All type of vehicles

First outbreak (1)

- atypical resp. symptoms mid January observed by farmer
- 15 January practitioner: pneumonia > antibiotic treatment
- 20 January practitioner > PRRS pigs?→ autopsy (AHS): tonsils→ (CVI) negative CSF (IFA)
- 30 January practitioner;→ pig autopsy (AHS) : →no CSF (CVI)
- 3 February; →autopsy inconclusive (AHS):
- 4 February autopsy CSF confirmed

First outbreak (2)

- herd culled 5 February
- 10/100 serologically positive pigs
- Start infection ± mid to end Dec. 1996 !
- cold weather (-10 to -20 C) in that period increased survival of virus
- Dutch trucks (used) in infected area in Germany (Paderborn- slaughterhouse- carwashing difficult at -20 C)

Complications in a pig dense area
(pigs/2800/km²)

By late recognition and conformation of CSF:
about ± 39 contact farms alreaydy infected (=24-67 at 95% confidence interval)
The delay of final diagnosis:
- rumours in neighbourhood of suspected farms
- transport of pigs continued before transport ban became effective by official (printed) state declaration
- about 17 farms were infected by transport vehicles

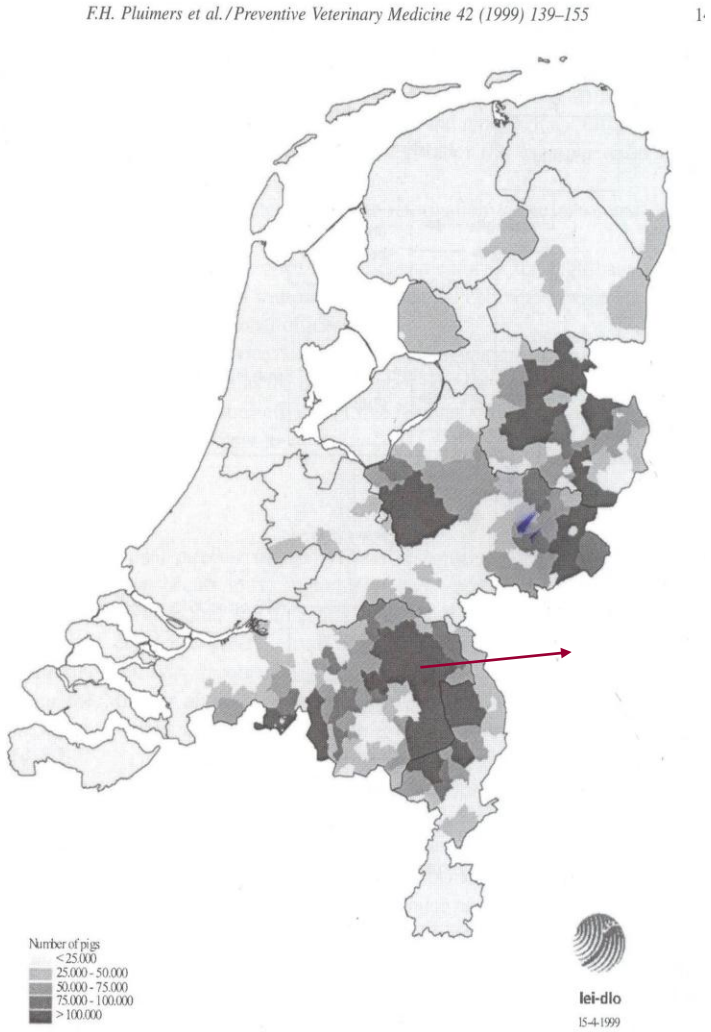

Fig. 1. Distribution of pigs per municipality in the Netherlands in 1996.

Overview of epidemic (1)

chronology	Mean decisions	Mean events and problems
Starting phase **4/2/97-10/4/97** **Tot. infections: 91**	Standstill, Prev. killing Export prohibit 1675 herds suspicious by AI infected semen. Killing AI sows (Tonsils+Blood) Welfare rules implemented; buying out	Venhorst/Odiliapeel (diagnose > transport ban) First impression; isolated infection. Tracing possible transports infected pigs and semen to Italy, Belgium and Spain Start infected AI centres

Overview of epidemic (2)

chronology	Mean decisions	Mean events and problems
In between phase **10/4/97- 9/9/97** **Tot. infections: 400**	Use military Preventive killing Ban and use mixed semen Total transport ban South Netherlands Breeding ban Improve hygiene measurements Killing young piglets by injection	Destruction capacity Preventive killing (7 days norm) Welfare buying out destruction capacity to low New infected area (Toldijk 16/7) Scaling-up of the CSF organisation Society discussion about killing young piglets

Overview of epidemic (3)

chronology	Mean decisions	Mean events and problems
End phase **10/4/97- medio March 98** **Tot. infections: 429**	Suspending welfare buying-out Compartimentilizing animal transport ban ;restrictions Inbetween screening Reduction measures on bed hygiene. Suspending breeding ban Start repopulation. Preventive killing based on one positive blood sample.	Carrier sows Discussion EU experiences Last herds Escharen and Ravenstein

Organisation: structure

- National Crisis Management Team
  Ministry of Agriculture

- Regional Crisis Centre
  Subsidiary centres for screening

Nat. Crisis Management Team

- **Chair:** Secretary General MA
- **Members:** CVO, diff. Directors or deputy's of Min. of Agr.
- **Tasks:** Strategy
  Evaluation
  Overall management
  Information Parlement, National press

Regional Crisis Centre

- **Veterinary Manager Vet.Service activities**
- **Tasks:- management eradication**

  - reporting to CMT
  - reporting to GM RCC
- **Staff:- protocols**
  - quality, inspection

Technical departments:
Area Marking, Screening, Tracing, Culling, Animal Welfare

- **Support departments: Administration by Computerisation, Finances, Materials, Personel, Sample logistics**

Diagram of the organisation

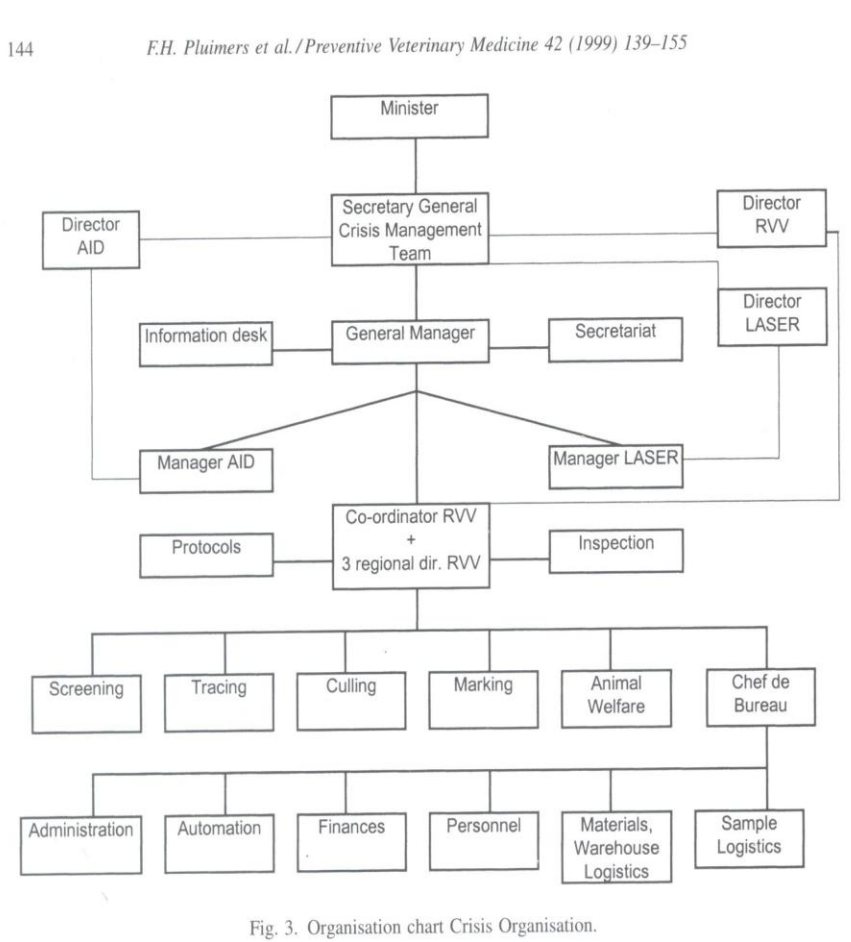

Fig. 3. Organisation chart Crisis Organisation.

IT: InformationTechnology

- **Innitionaly no specialised hard and software available**
- **Systems was built during eradication according to specific needs**
- **No integrated system**
- **Problems with data processing**

- **Lessons learned**
- **New informatisation plan to support eradication of diseases**

Administrative organisation

- **Not in contingency plan of Min.**
- **Protocols prepared in Reg.Crises Center**
- **Administrative and financial documentation in first months defective**

- **Lessons learned**
- **Procedures now incorporated in new contingency plan**

Activities

- Transport ban,
- Stamping out,
- Tracing,
- Prev. culling,
- Sampling,
- Screening and Tracing

Transport ban

- **1 km radius infected farm (surveillance zone) + 10km bufferzone**
- **Total ban animal transport 7 days**
- **Transport ban 10 km pigs + manure after 7 days**
- **No exemptions, no corridors, no slaughter (animals and vehicles stayed within the corridor)**

Stamping out

- Killing all pigs on farm
- Transportable Electrocution machine
- Mobile sanitary facility for personel
- Carcasses transported in leak proof and closed vehicles to renderer
- First disinfection + pest controll
- (Farm closed 14 days)
- Cleaning and final disinfection
- 700,000 pig killed and destroyed (pos.farms)

Tracing

Infectious period estimated from lab test

- After Sampling infected farm
- Veterinarians + Agricultural police
- Tracing and tracking
- Infectious period (estimated from lab test)
- Contacts with pigs, farmer and staff, visitors, rendering trucks, feed supplier etc.
- Contacts declared as suspect, high risk, contacts pre-emptive culling
- Epidemiology

Preventive culling (1)

- In February 26 farms in 1 km radius of outbreak 1 and 2
- Advise against this prev. culling policy
- After 2 month several infections on farms near earlier outbreaks
- Mid April; Introduction pre-emptive culling of dangerous contacts and all neighbouring farms within radius of 1000 m of infected farm
- 1.125.000 pigs killed of 1200 farms

Preventive culling (2)

- Comparison of Prev. culling effect in Radius 1000, 500 and 250 m
- Reduction infected farms best at 1000 m
- 2000 m very little extra effect
- Effect less at larger interval
- Animal, transport and neighbour contacts

Sampling (1)

- **Clinically suspected herds**
- **Visited by (specialised) vets**

  - Diseased animals killed on farm > autopsy at AHS (specialized pathologists) > tonsils, spleen, ileum, kidney to CVI for IFA

  - Blood samples for virus isolation and antibody detection direct to CVI

Sampling (2)

Infected + preventively culled herds

- **temperature taken of:**
  - **all diseased animals**
  - **randomly in pens non diseased animals**
  - **randomly animals pens visitors**
  - **randomly recent introductions**
  - **healthy animals: Sows and finishers 20%, piglets 10%, boars all**
- **+heparin blood of: animals with fever**
- **serum samples of: 50 pigs + 20%**

Screening

- **Protection zone weekly visits**
- **Surveillance zone once**
- **Clinical inspection + temperature**
- **Counting pigs**
- **Endscreening: All farms with pigs, serum samples: prevalence 2% at 95% confidence**

Artificial Insemination

- **2 AI centres detected March ’97 (reoganisation of boar centers> increase of transportations> different vehikels)**
- **after 3 weeks infected farm by semen**
- **1680 farms declared suspect, mainly in infected area, but also outside**
- **6 weeks after last semen delivery serology**
- **Animal welfare problems**
- **21 to 36 farms most likely infected by AI**

Compartmentalisation

- **Spread of CSF through vehicles**
- **To prevent outbreaks outside infected area, vehicles to transport Animal, feed, milk, rendering stay in a same compartment**
- **Compartments: -Infected zone**
  -South Netherlands
  -North Netherlands

Animal welfare problems

- **Transport dependent structure**
- **Overpopulation of pens**
- **Buying out: EU market measure**
- **Clinical inspection + serum samples**
- **Transport to killing station**
- **Rendering**
- **2,5 million slaughterpigs, 5 million piglets and 0.5 million growing out gilts in “buying-out”**

Rendering capacity:

- **April till July ‘97:**
  - many new outbreaks
  - pre-emptive culling
  - buying out
- **Needed: 3.000 tons/week**
- **Available capacity 800 tons + 800 tons export (German+Belgium rend.)**

Rendering capacity; Solutions

- **Storage in freeze- and cold stores to be destroyed later (wrapped in plastic in containers)**
- **Export to renderers in Belgium and Germany (only pigs from unsuspected farms)**
- **Killing very young piglets (2.8 million) (emotional problems by farmers and vets)**
- **Breeding ban (for 233,000 sows = 20% of dutch sow population) Checked by pregnancy testers**

Other aspects

- **Decreasing sensitivity of clinical inspection**
  (after killing piglets and wellfare buying-out slaughtering no high sensitive pigs in the farms)
- **Repopulation (by restricted areas, from know herds by off. aggrements**

Lessons Learned

- People
- Methodes
- Equipement

Lessons learned necessary for a successful eradication of CSF (1)

- **People**:
- Regular training in period of ,, peace,,
  (including the subcontractors)
- Teams of specialist for visiting herds, taking blood/tonsil samples, for animal killing and animal destruction (mentally stable) and Laboratory workers. Working with high speed but with discipline (hygiene/animal welfare) .
- Teams for Cleaning and disinfection material and Teams for rodent control
- Teams for screening, tracing and tracking.

Lessons learned necessarily for a successful eradication of CSF (2)

- **Methods:**
- **Immediately stand still**
- IT: To know exactly the number of pig herds and number of pigs in marked areas (including hobby and backyard farms.
- Indication when action is started and finished. (by coupling the computer programs)
- This also has to be coupled with the geographic map to organize preventive killing in a right order.
- When to start with killing of young piglets to prevent overcrowding and welfare problems?
- When to start to ban mating/insemination of sows

Lessons learned necessarily for a successful eradication of CSF (3)

- **Methods**:
- Investigation methods: Uniform and standardized to confirmed modern standards (labtests, ringtrials),
- Sampling materials. Standardized to use lab. robots (large numbers of sera and PCR)
- Shortening of time between clinical suspicion and diagnose of the lab. e.g. using PCR and ELISA. (reduction from weeks till hours which may reduce the number of herds to slaughter preventively)
- Lab test **always additionally** to clinical herd inspections. (Tailor made herd slaughtering)

Lessons learned necessarily for a successful eradication of CSF (4)

- **Equipment:** (enough facilities standby).
- Utilities, transportation, mobile electrocution machinery
- Considering the large size of herds in a high pig dense area, enough killing capacity and destruction capacity is needed
- Possibilities to increase quickly the destruction capacity and transportations of the carcasses to rendering plants (by special trucks (contractors)
- Attention:
- Improve knowledge about hygiene and hygiene standards (also contractors)

- Thank you for your attention