Member's update on FMD, PPR and LSD

Hong Kong Special Administrative Region, China

Dr. Jeremy Ho

Senior Veterinary Officer (Animal Health)
Agriculture, Fisheries and Conservation Department
Hong Kong SAR, China

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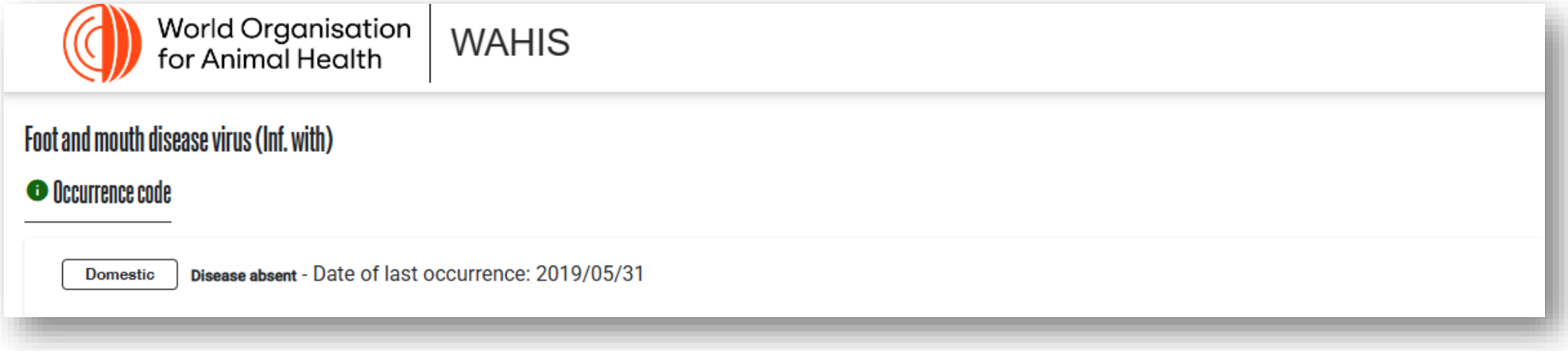
World Organisation for Animal Health

中华人民共和国农业农村部
Ministry of Agriculture and Rural Affairs of the People's Republic of China

Ministry of Agriculture, Food and Rural Affairs

Disease Situation – FMD

- Domestic: no case reported since May 2019
  - last case was reported on a local pig farm



Disease Situation – FMD

Susceptible population

- **Susceptible Livestock population**
  - 43 local pig farms, with maximum capacity of 74 640 pigs
  - 1 small scale dairy farm for veterinary teaching purpose, with around 60 cattle

- **Other identified susceptible population**
  - Feral cattle and water buffalo in Hong Kong country parks
    - 860 brown cattle and 180 water buffalo (2022 population survey)
  - Wild pigs population estimated to be around 900 in 2024

Disease Situation – FMD

Disease Status

- First identified in the **1950s**, being **endemic** since then
- **Passive surveillance** by monitoring of clinical disease
  - Diagnostic method: **RT-PCR** and **rRT-PCR**
  - Samples tested positive sent out to **WOAH Reference Laboratory** (The Pirbright Institute)
- Common identified serotype: **O (Cathay)** on pigs
- Last case reported in **May 2019 on pigs**
  - No clinical signs or suspected case reported from livestock population or other identified susceptible population since then

Disease Prevention and Control – FMD

- Disease Notification
- Import control
- Monthly farm inspection
- **Vaccination** (non-compulsory)
  - Common vaccine strains for pig farms: RE-O-MYA98/JSCZ/2013, O/PanAsia/TZ/2011, RE-A/WH/09
  - For cattle in dairy farm : FMD serotypes O, A in inactivated form (Aftovax - by Boehringer Ingelheim)
- Enhanced **biosecurity measures** of pig farms
- **Slaughterhouse practice** was one of the major challenges to prevent and control FMD previously

Import Permit

Challenges and Possible Solutions – FMD

Biosecurity measures established to tackle ASF outbreak also effective against FMD

Source Control
源頭控制

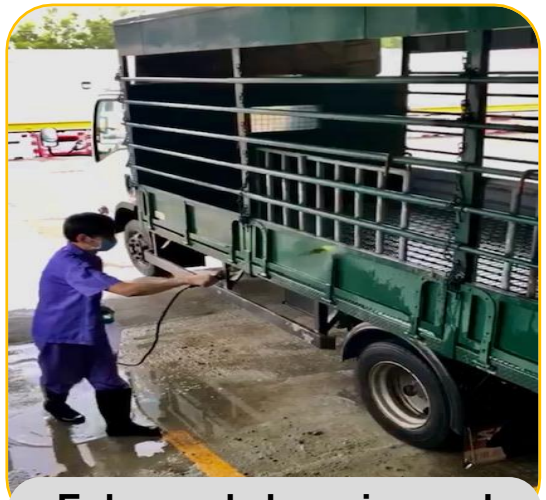
Disinfection pool for vehicles
進出車輛消毒池

Lairage disinfection
豬欄消毒

Ante-mortem inspection
宰前檢驗

Suspected cases detained for further inspection
扣留懷疑個案的豬隻進行覆檢

Post-mortem inspection
宰後檢驗



Enhanced cleansing and disinfection for pig transportation vehicles
運豬車輛加強清潔及消毒

Daily Clearance
日日清

Disease Situation – LSD

Susceptible population

- **Feral cattle** and **water buffalo** in Hong Kong country parks
  - 860 brown cattle and 180 water buffalo
- **1 small scale dairy farm** for veterinary teaching purpose with around **60 cattle**
- No surveillance and testing before the first outbreak in 2020, via passive surveillance by monitoring of clinical disease
  - Risk pathway: Vector? Import cattle?

Disease Situation – LSD

In Feral Cattle

- In October 2020, some feral cattle in Hong Kong developed **multi-focal cutaneous nodules** consistent with lumpy skin disease (LSD)
- In early November 2020, more similar cases were detected
- The clinical course lasted for **2 – 3 weeks**
- Clinical signs:
  - *Skin lesions*
  - *Fever*
  - *Malaise*
  - *Anorexia*
  - *Superficial lymphadenopathy*
  - *Nasal and/or oral ulcers*

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Disease Situation – LSD

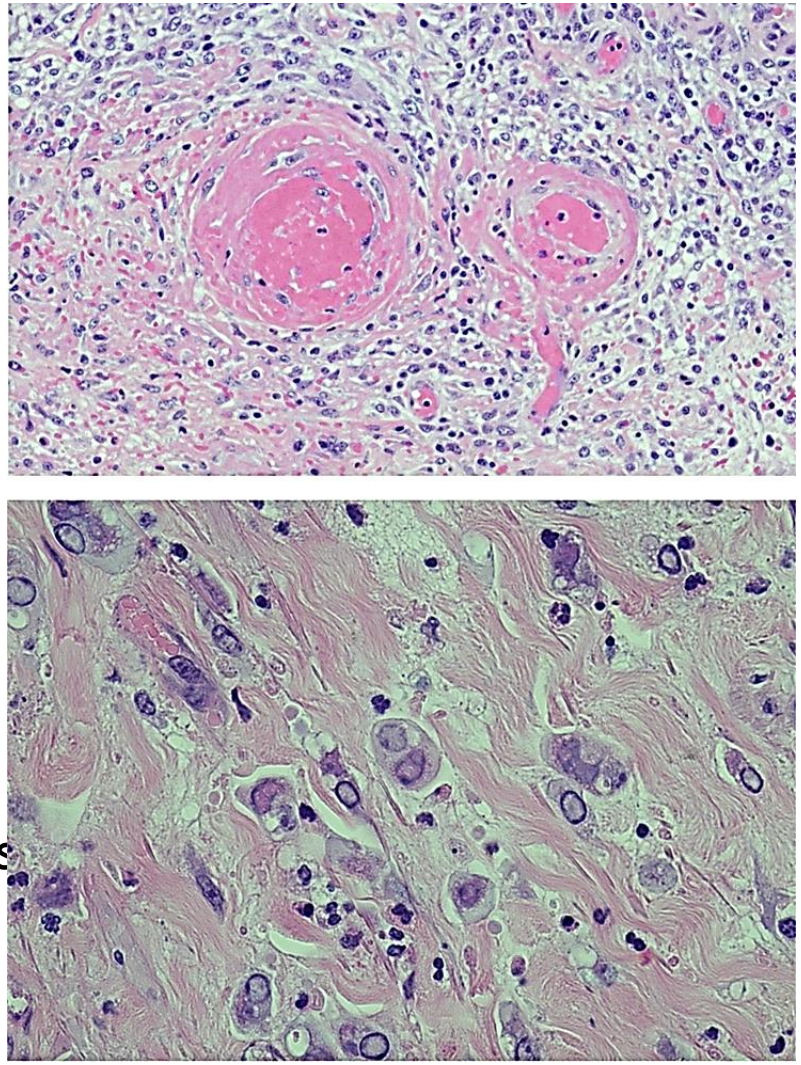
In Feral Cattle

- Samples were submitted to the governmental veterinary laboratory (Tai Lung Veterinary Laboratory, TLVL) for testing, including **histopathological examination**
  - *As gross and histological pathology supported the diagnosis, samples were sent to the WOAH Reference Laboratory at The Pirbright Institute for confirmatory testing*
- **Morbidity 20 - 30%** (only in feral cattle, no water buffalo was affected)
  - *Water buffaloes in Hong Kong seemed to be unaffected, both clinically and serologically*
- Last reported by public members in **March 2021**
- No suspicious cases in feral cattle after March 2021

Laboratory Capacity

Postmortem examination on euthanized severely affected cattle

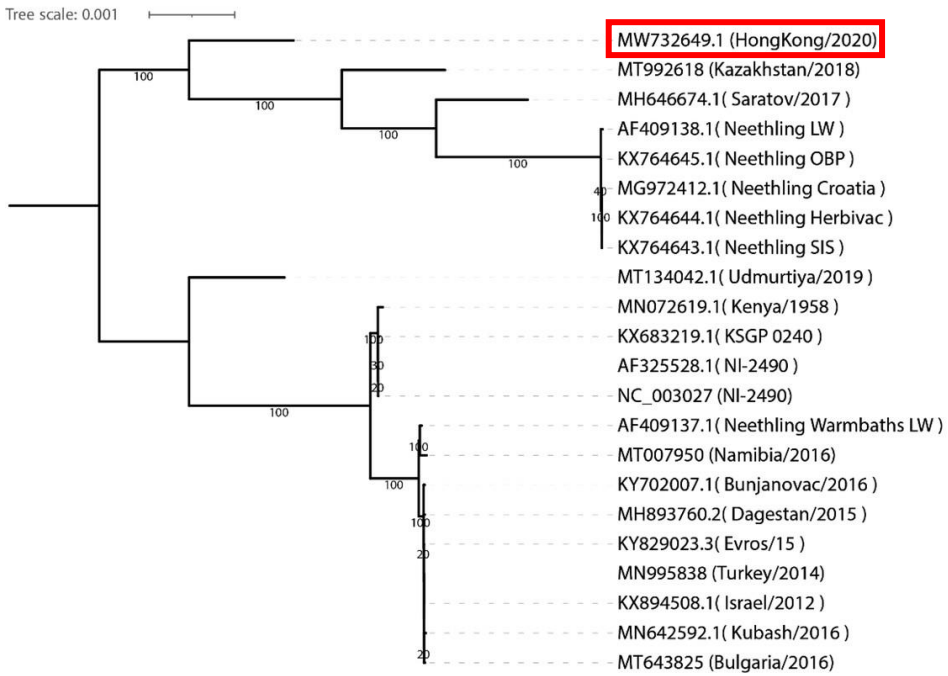
- Gross findings
  - *Widespread, randomly distributed **cutaneous, and subcutaneous nodules** ranging from 1 to 40 mm in diameter*
  - *Multiple superficial **lymph nodes** were enlarged and haemorrhagic*
- Histopathological findings
  - ***Necrotizing vasculitis** that started from the deep cutaneous plexus with abundant surrounding infiltrates of predominate large histiocytes and fibroblasts.*
  - *The histiocytes frequently contained a large, prominent eosinophilic or amphophilic, **intracytoplasmic inclusion bodies** and had **marginated chromatin***



Marked, multi-focal, necrotizing, and histiocytic dermatitis with (upper) necrotizing vasculitis and (lower) intracytoplasmic inclusion bodies

Laboratory Capacity

- Tissue samples were submitted to the WOAH Reference Laboratory for LSD at The Pirbright Institute, UK
- LSDV was isolated from skin samples taken from three animals and named **LSDV/HongKong/2020**/01 to 03
- Whole genome sequencing and phylogenetic analysis revealed the LSD outbreak was caused by a **different strain of LSDV** than the LSD epidemic in the Middle East and Europe in 2015 – 2018.
- Test in TLVL from Oct 2020 to Jun 2025
  - ***PCR: 294 tests***
  - ***Serology: 127 tests***



Prevention and Control Measures – LSD

In Feral Cattle

- Disease was **self-limiting** in majority of the cases
- Affected animals **recovered**
- Natural **herd immunity** seemed to build up
- No clinical cases since March 2021
- **Vaccination is not feasible in feral cattle population**

Prevention and Control Measures – LSD

- **Passive surveillance** in form of observations by the AFCD cattle team, country park staff and reports of sick cattle from the public
- **Serological surveillance**
  - ***Purpose: to see if LSD is still present in the feral cattle population***
  - *Sampling target: all the cattle that were born after March 2021 (just less than 2 years old) but older than 3 months old*
    - *Sampling period: started after October 2022*
    - *Convenient sampling: 14 calves/juveniles sampled*
  - ***Result: No clinical sign and all seronegative***

Disease situation – LSD

In Domestic Dairy Farm

- In May 2024, a **local teaching dairy farm** with total cattle size around 60 reported 16 yearling cattle showed lesions resembling LSD
  - *Lesions are multiple, well-defined, firm cutaneous nodules.*
- They belong to a group of 19 cattle with **average age of 15 month-old**
- Vaccinated against LSD in the previous year but the **booster was overdue** for a few months

Disease situation – LSD

In Domestic Dairy Farm

- The lesions were **mild in most cases**
- 3 of the 16 cattle have **extensive lesions** with clinical signs:
  - *Extensive skin lesions*
  - *Fever high up to* 40.5C
  - *Anorexia*
  - Lacrimation
  - Nasal discharge
  - Hypersalivation
  - *But still bright and active*

Prevention and Control Measures

In Domestic Dairy Farm

- Isolation of the affected cattle to a shed with **mosquito netting** and fog the entire farm with **insecticide**
- **Revaccination** the herd against LSD with Bovillis Lumpyvax (Neethling strain)
- *Provide **supportive treatment** to the severely affected individuals with* antibiotic and NSAIDs

Prevention and Control Measures

In Domestic Dairy Farm

- No further LSD cases reported afterwards
- Mosquito netting removed **after 56 days (two incubation periods with reference to WOAH Terrestrial Code)** without new cases
- All affected cattle **recovered after supportive treatment**; no mortality or euthanasia was necessary

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Challenges and Possible Solutions – LSD

- The **mode of entry** of the virus to Hong Kong is **not known**
  - *It is possible that LSD spread to Hong Kong through **flying vectors (e.g. mosquitoes)***
- AFCD management plan for LSD is mainly aimed to
  - *Minimize the impact of this disease on the **welfare** of animals*
  - *Reduce the **impact to other commercial cattle** in the broader region*
  - *Protect the historically valuable and irreplaceable local feral cattle and water buffalo populations*
- Prevention and control measures as possible solutions that had been taken into consideration
  - ***Surveillance***
  - ***Vaccination***
  - ***Supportive treatment***
  - *Euthanasia for severe cases if necessary*

Challenge and possible solutions

- ~~Vaccination~~ on feral cattle
- ~~Movement control and zoning~~
- ~~Vector control~~
  - *All the above are not feasible due to the **feral nature** of the feral cattle and water buffalo populations*
- ***Vaccination would be conduct annually on Dairy Farm***
- Stamping out?
  - *Practically feasible but public perception are of major concern*
  - *May not be necessary as the disease is controllable on Dairy Farm by Vaccination*

Additional Reading

Received: 20 April 2021 | Revised: 2 August 2021 | Accepted: 25 August 2021
DOI: 10.1111/tbed.14304
Transboundary and Emerging Diseases
WILEY

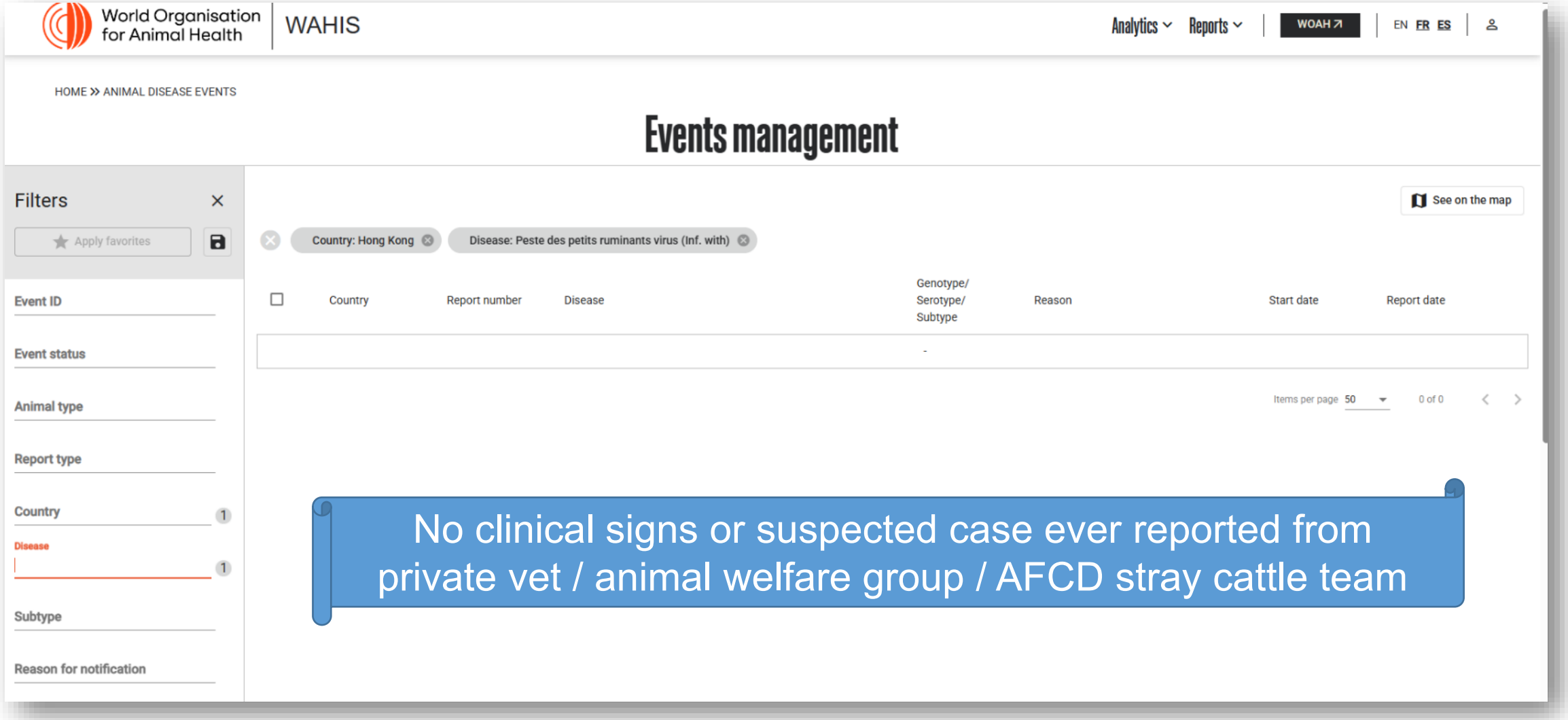
ORIGINAL ARTICLE

A novel strain of lumpy skin disease virus causes clinical disease in cattle in Hong Kong

John Flannery[1] | Barbara Shih[2] | Ismar R. Haga[1] | Martin Ashby[1] | Amanda Corla[1] | Simon King[1] | Graham Freimanis[1] | Noemi Polo[1] | Anne Ching-nga Tse[3] | Christopher J. Brackman[3] | Jason Chan[3] | Patrick Pun[3] | Andrew D. Ferguson[3,4] | Andy Law[2] | Samantha Lycett[2] | Carrie Batten[1] | Philippa M. Beard[1,2]

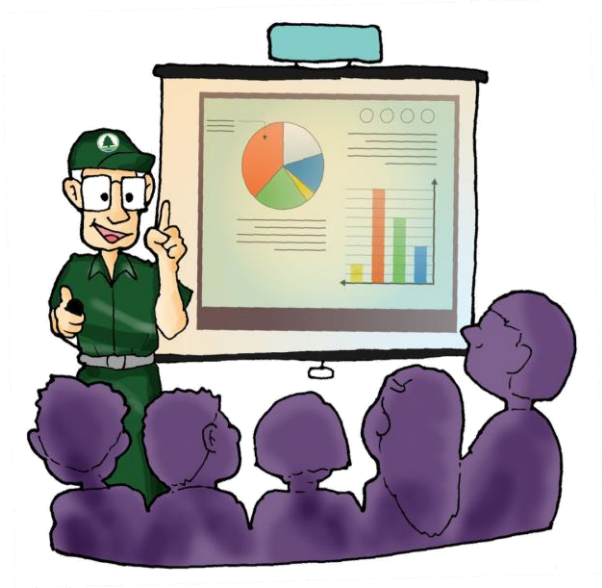
https://onlinelibrary.wiley.com/doi/10.1111/tbed.14304

Disease situation – PPR



Proposal for Future Activities

- Establish information sharing platform and mechanism among Members in East Asia
- Plan and coordinate training activities for East Asia Members on transboundary animal diseases



Thank you

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