Regional workshop on Vector Borne Disease for Asia and the Pacific 2024

Member experience on prevention and control for Vector Borne Disease [Korea, Republic of]

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19 – 20 September 2024
Tokyo, Japan

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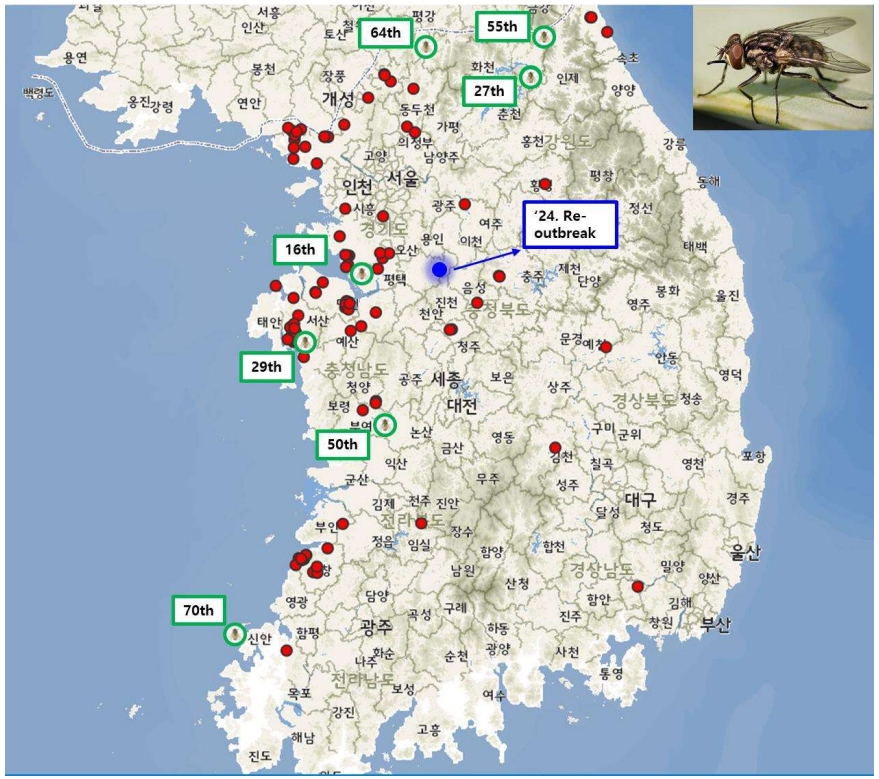
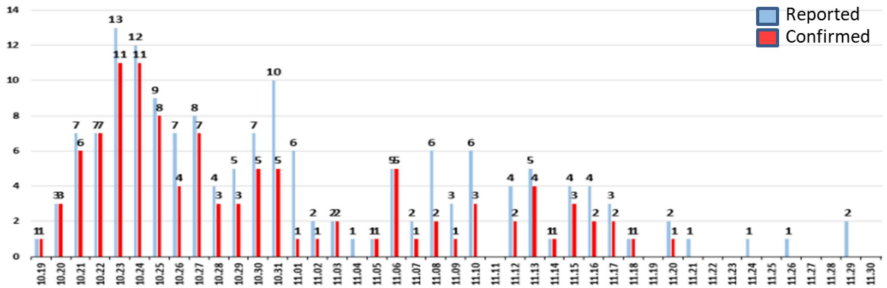
Vector Borne Disease situations

- Lumpy Skin Disease
  - (Emerging disease status)
    - ➲ First outbreak: October 19, 2023, Seosan, Chungnam Province
  - (Spread)
    - ➲ Western border regions (1st) / Northern (2nd) → Inland
    - ➲ 107 cases across multiple provinces (Red dot)
      - Occurrence over a period of 33 days
      - Detection of LSDV in stable flies trapped on outbreak farms (Green circle)
  - (Recent changes)
    - ➲ Outbreak in Gyeonggi Province, August 12, 2024 (Blue dot)





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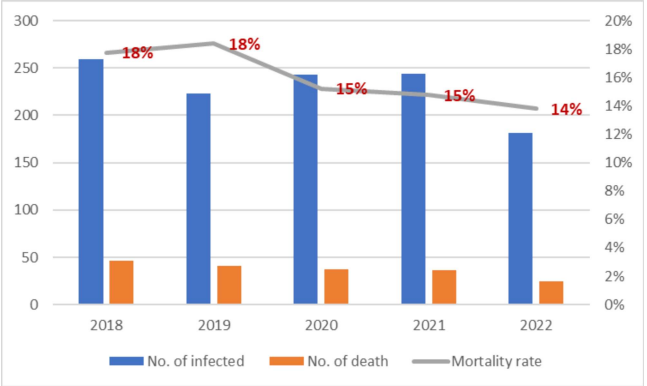
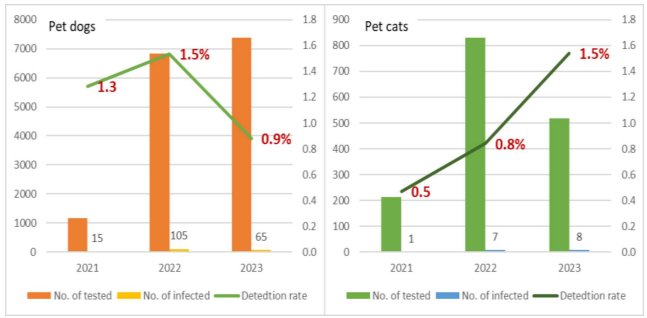
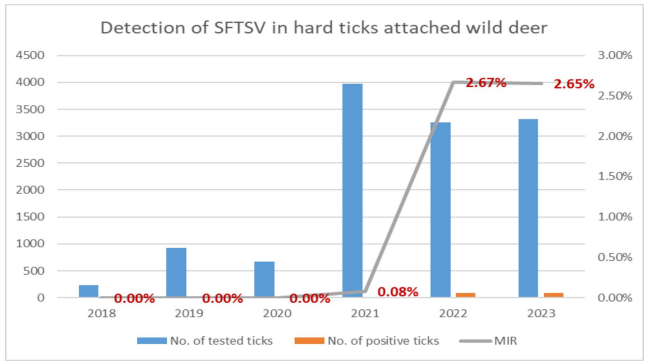
Vector Borne Disease situations

- Severe Fever with Thrombocytopenia Syndrome
  - (Endemic disease status)
    - ➲ Non-notifiable disease in animals, however, category 3 infectious disease in humans
    - ➲ (Mortality) Human (Avg. 16%), Dog (less than 0.1%), livestock (0%)
    - ➲ (Seroprevalence)
      - In livestock in 2014, Goat (12.5%) > Pig (10.4) > Cattle (4.5) > Chicken (2.5)
      - In shelter dogs, 13.8% (2016) → 26.8% (2017) → 47.4% (2021) → 35.1% (2022)
      - In feral cats, 16.3% (2016) → 17.7% (2021) → 20.9% (2022)
    - ➲ (Agent identification)
      - In pet dogs, 1.3% (2021) → 1.5% (2022) → 0.9% (2023)
      - In pet cats, 0.5% (2021) → 0.8% (2022) → 1.5% (2023)
      - In hard ticks (MIR), , 0.08% (2021) → 2.67% (2022) → 2.65% (2023)
  - (Recent changes and factors)
    - ➲ Better diagnosis, and outdoor activities
    - ➲ Changes in tick populations, and an increase in the SFTSV load in ticks







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Detection capacity

- Disease covered
  - [1]LSD, BT, AHS, RVF, WN, JE, Schmallenberg , VS (Indiana, New jersey), ASF
  - [2]SFTS, [3]Akabane, Aino, Chuzan, Ibaraki, BEF
  - [4]Anaplasmosis, Babesiosis, Ehrlichiosis, Lyme disease, Q fever
- Types of diagnostic tests

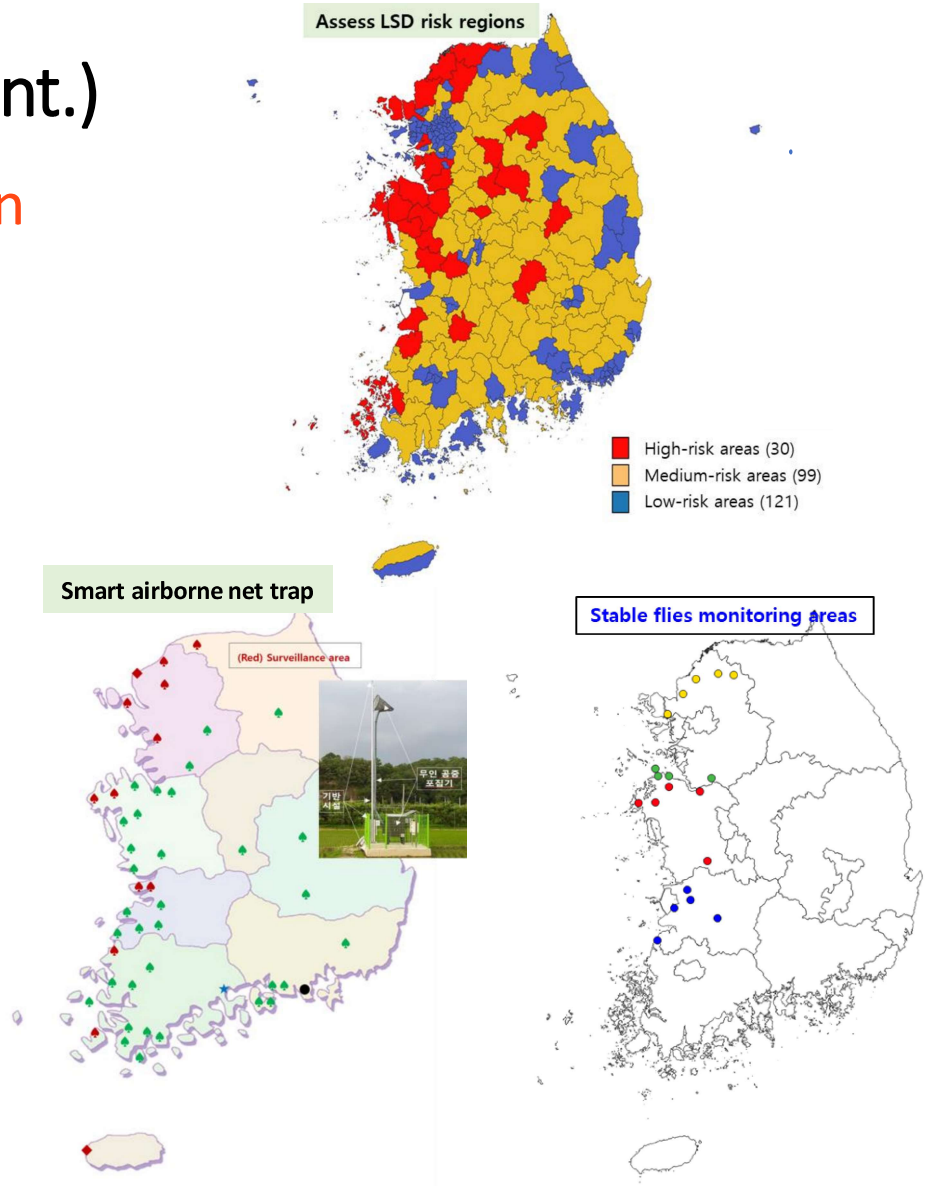
	Method	1	2	3	4
Agent identification	Real-time PCR	✓	✓	✓	✓
	Agarose gel-based PCR	✓	✓	✓	✓
	Agent isolation	✓	✓	✓	
Serological test	ELISA	✓			
	IFA		✓		
	VN	✓	✓	✓	

Response to Vector Borne Diseases

- Surveillance (animal and vector surveillance)
  - (Animal)
    - Active surveillance programs for early detection and proof of absence
      - BT, AHS, Arbovirus simbu group (Akabane, etc.), BEF, Ibaraki, RVF, WN, JE, LSD, VSV, Zika
    - Passive surveillance of suspected animals
  - (Vector) Surveillance in the airports, harbors, and livestock farms, for collecting season
- Responses and control
  - Movement restriction, ban on the movement of live animals
  - Culling (all or infected)
  - Mass vaccination
    - In response to the LSD outbreak, massive vaccination were implemented, resulting in the containment of the disease within 33 days.
  - Vector control, Intensive surveillance, etc.

Response to Vector Borne Diseases (cont.)

- Preventive measures to avoid introduction
  - Risk assessment
  - Enhance border controls
    - Smart airborne net trap (15 areas)
    - Expansion of vector surveillance area (20 farms)
    - Implementation of vector control measures in the airport and port
  - Survey of blood-sucking insect density, etc.
- Contingency plans available
  - Emerging animal diseases response and reporting system
  - Livestock disease and vehicle (livestock, feed) control center



Impact of the actions

- Improved disease detection and surveillance
  - Standardized and well-established diagnostic system
- Establishment of an antigen bank
  - Stockpile vaccines when commercial VBD's vaccines are available
- Development of vector control strategy
  - Expand vector surveillance in the regions affected by the LSD outbreak
  - Enhancement of high-altitude (10m) insect trap surveillance
- Strengthening border control and disease prevention
- Improvement of systems (disease control policy), including SOPs
- Education and Farmer training, Diagnostic training
  - Essential infection and vector control guidelines, notification of suspected animals
- Research and Development
  - New vaccines and treatments, Resistance management

Collaboration with other sectors under One Health approach

- Project to establish a surveillance system for human-animal SFTS transmission (since 2020)

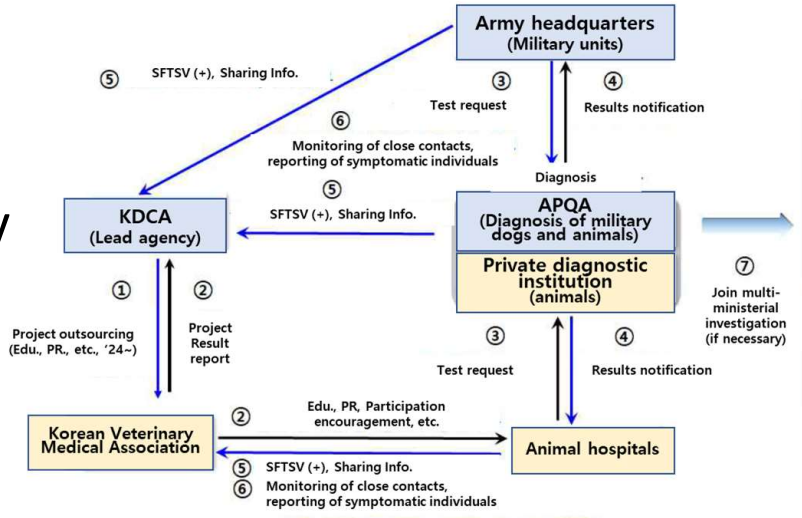
➲ A multi-ministerial project led by four agencies

- (Lead) Korea Disease Control and Prevention Agency (KDCA)
- (Participation) Animal and Plant Quarantine Agency (APQA), National Institute of Wildlife Disease Control and Prevention (NIWDCP), Republic of Korea Army Headquarters

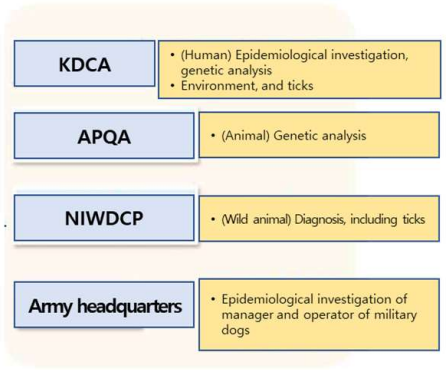
➲ (Objective)

To prevent spillover infections, control and block transmission among high-risk groups for SFTSV

- High-risk groups:
  Pet owners, veterinarians, animal technicians, soldiers, etc.



Surveillance system for human-animal SFTS transmission cases



Collaborative joint investigation system

Challenge and possible solutions to strengthen the collaboration

- A brief description of challenges to strengthen the collaboration with other sectors and your actions/ideas to overcome these challenges
  - Establishment of a joint surveillance framework for vectors (including migratory vectors) among Asia-Pacific countries
  - Information sharing on vector and VBD surveillance status, and prevention and control policies (strategies) for vector-borne disease by country
  - Formation of a network and establishment of a council for vector expert groups
  - Promotion of joint research projects among countries, such as vector surveillance, vaccine and treatment developments

Thank you

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Expectations for the VBDs workshop (Not Included in the Presentation)

- A request information on the following matters:
  - Given the rising antibody positivity rates, what strategies can be adopted to prevent the circulation of the Bluetongue virus at low titers?
  - What best practices from other countries' SFTS management can be integrated into our national policies?