



Scientific and Steering Committee

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HPAI Surveillance on Live Bird Markets in Cambodia

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◆ **Background**

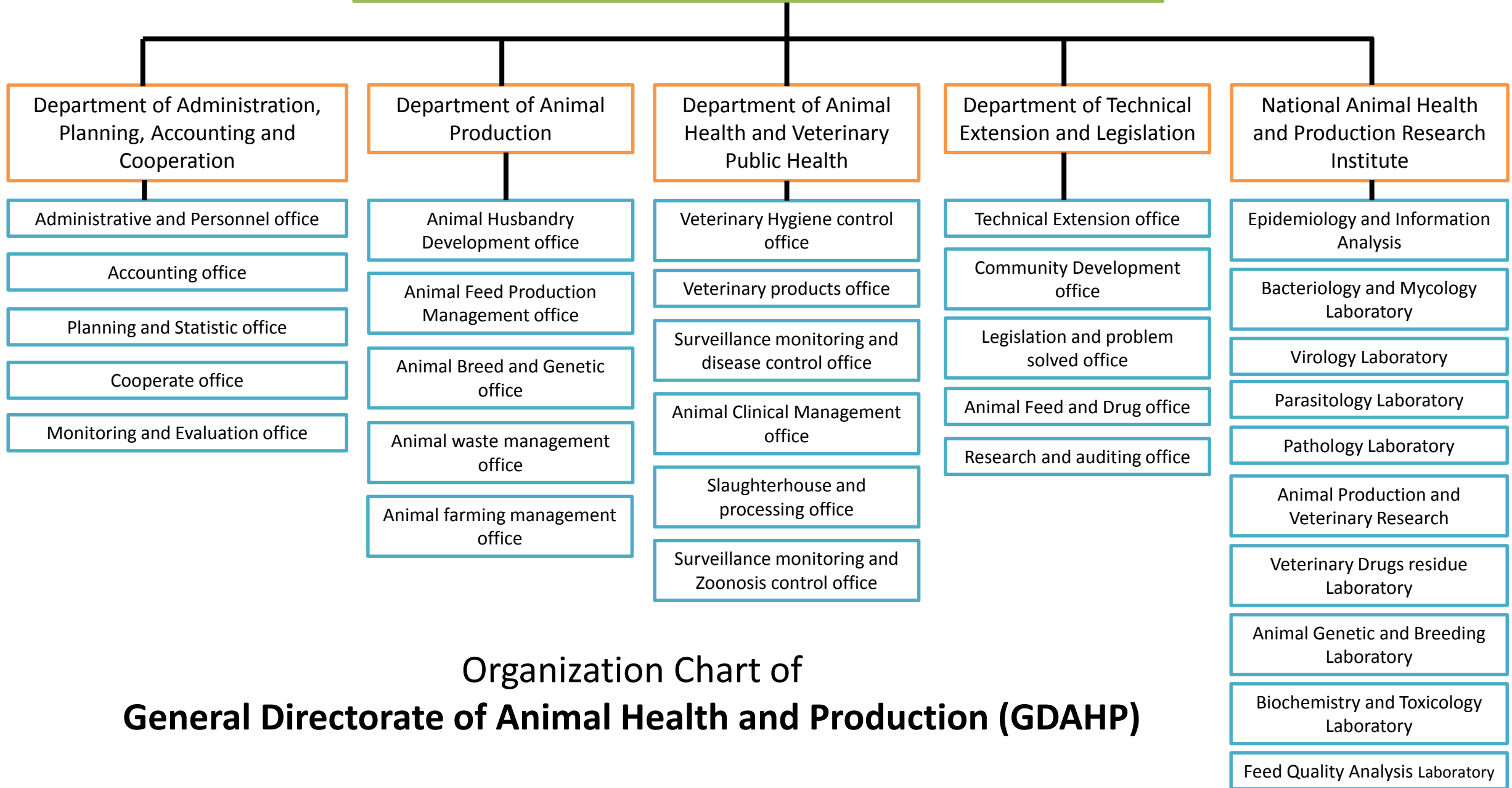
◆ **HPAI in 2022**

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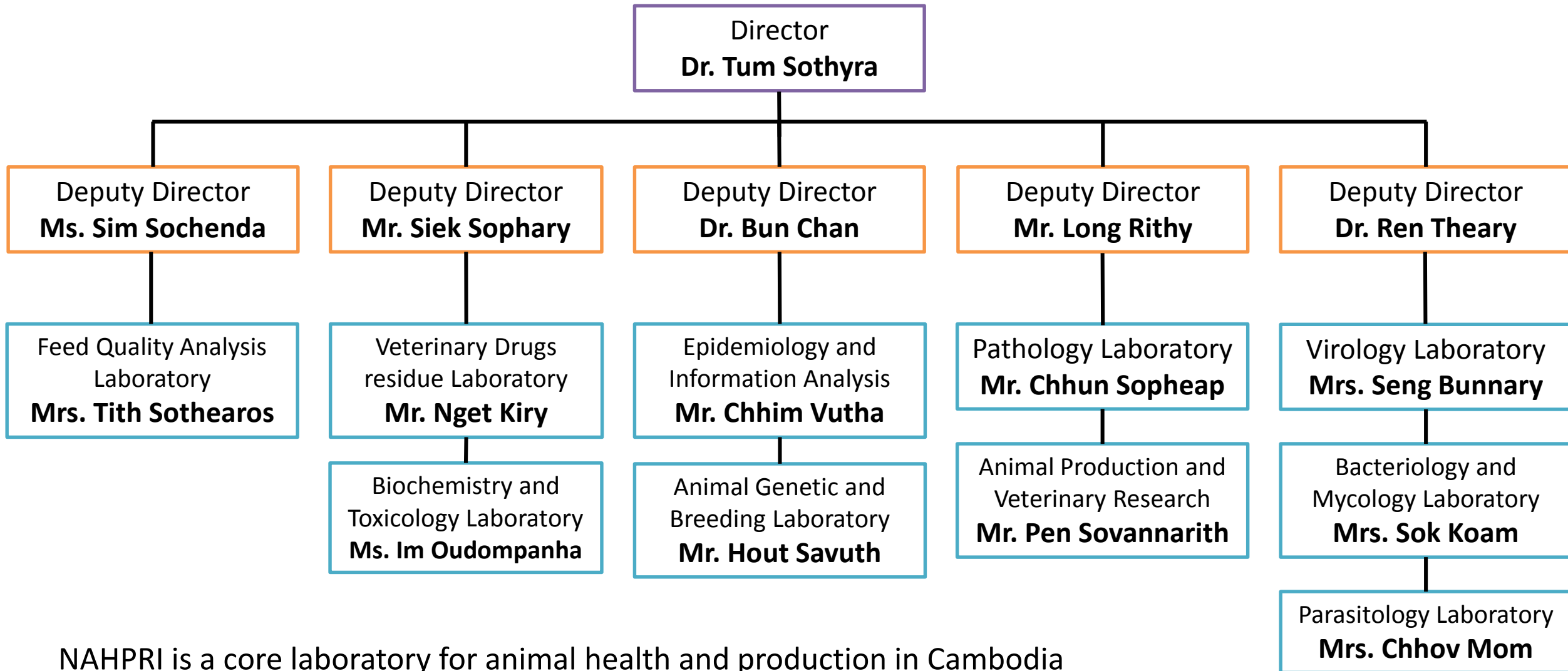


General Directorate of Animal Health and Production



Organization Chart of
General Directorate of Animal Health and Production (GDAHP)

Organization Chart of National Animal Health and Production Research Institute (NAHPRI)



NAHPRI is a core laboratory for animal health and production in Cambodia
There are 8 laboratories, 1 office and 1 research station

Background

Livestock production

- Livestock plays a dual role in addressing the increasing demand of an expanding population for animal products as well as in achieving the Millennium Development Goal of poverty reduction and food security.
- Animal production is also a source of savings for Cambodian farmers.
- Livestock population in 2022
 - Cattle: 3 million
 - Buffalo: 0.54 million
 - Swine: 2 million which 86% is back yard production
 - Poultry: 27.3 million which 81% is back yard production





AVIAN INFLUENZA

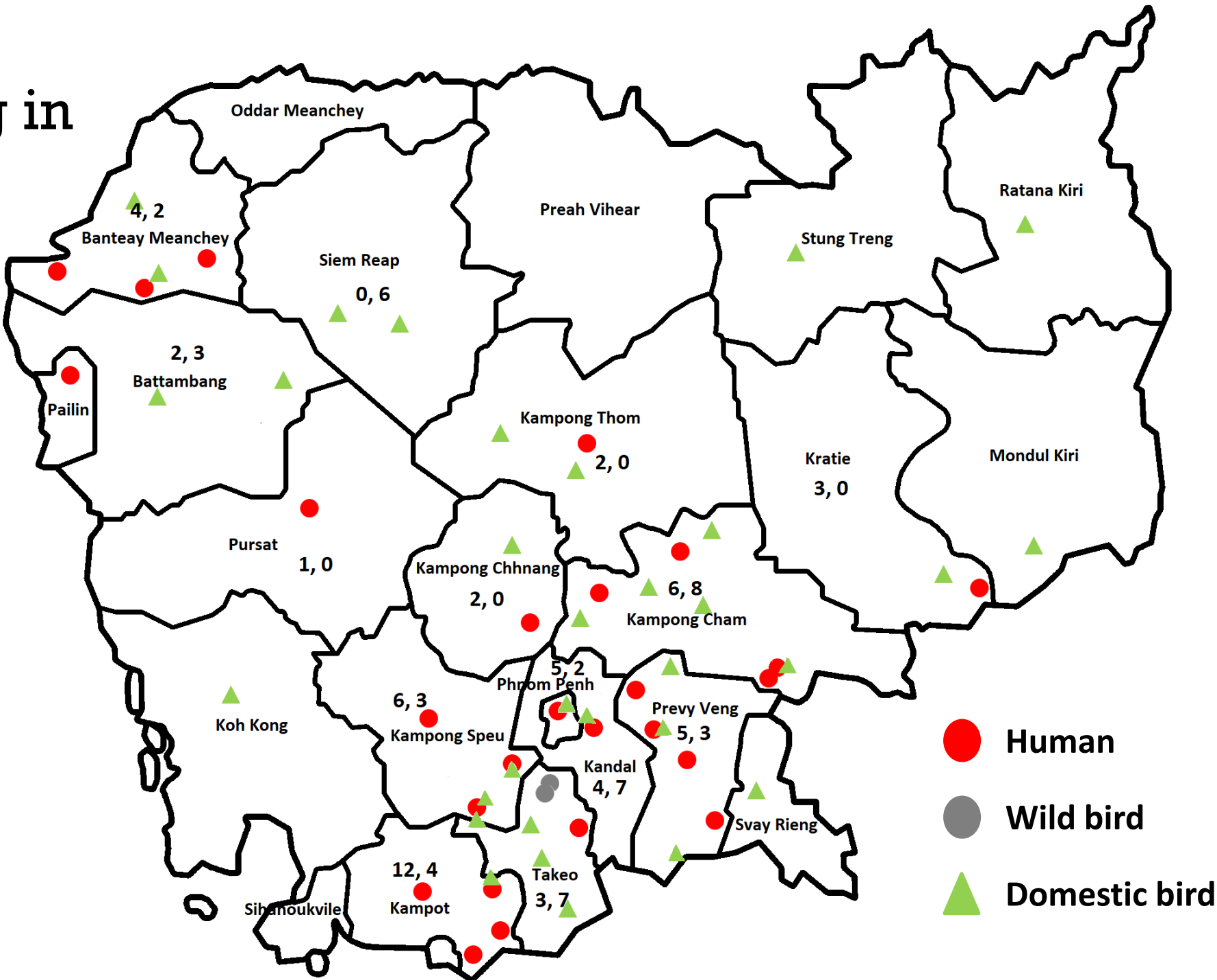


HPAI in Cambodia

☼ HPAI was first reported in **2004**, in Phoum Pong Peay, Sangkat Phnom Penh Thmey, Khan Tuol Kok, Phnom Penh. **There were 56 confirmed human cases with 37 deaths.**

- ☼ To date there were confirmed 59 outbreaks reported with over 0.5 million poultry died and destroyed
- ☼ Most of reported human cases to have contacted with sick and dead poultry and/or reported of poultry died-off in the village
- ☼ Cambodia has been categorized as endemic country with sporadic outbreaks (ASEAN, 2012)

HPAI mapping in Cambodia





Experience learned from HPAI outbreaks

- Difficult to identify the source of the outbreak
- Movement of people and poultry/poultry products is complex, particular in the villages with backyard system
- Frequent interaction with middlemen
- Roles of middlemen, poultry transporters/trucks, animal feed and vet drug companies)
- Low reporting of poultry mortality (obligation, to whom...)
- Collaboration between human and animal health sectors (information sharing 115 and hotline)
- Financial contribution to field officers to involve in outbreak investigation and response



AIV Outbreak Recognition and Investigation

LBM surveillance in 2010-2022

-LBM surveillance conducted in the provinces where outbreaks of HPAI reported

-NAHPRI-FAO (Blue)

Battambang, Kampong Cham
Kampong Chhnang, Kampong Thom
Kampot, Mondulhiri, Siem Reap,
Svay Rieng

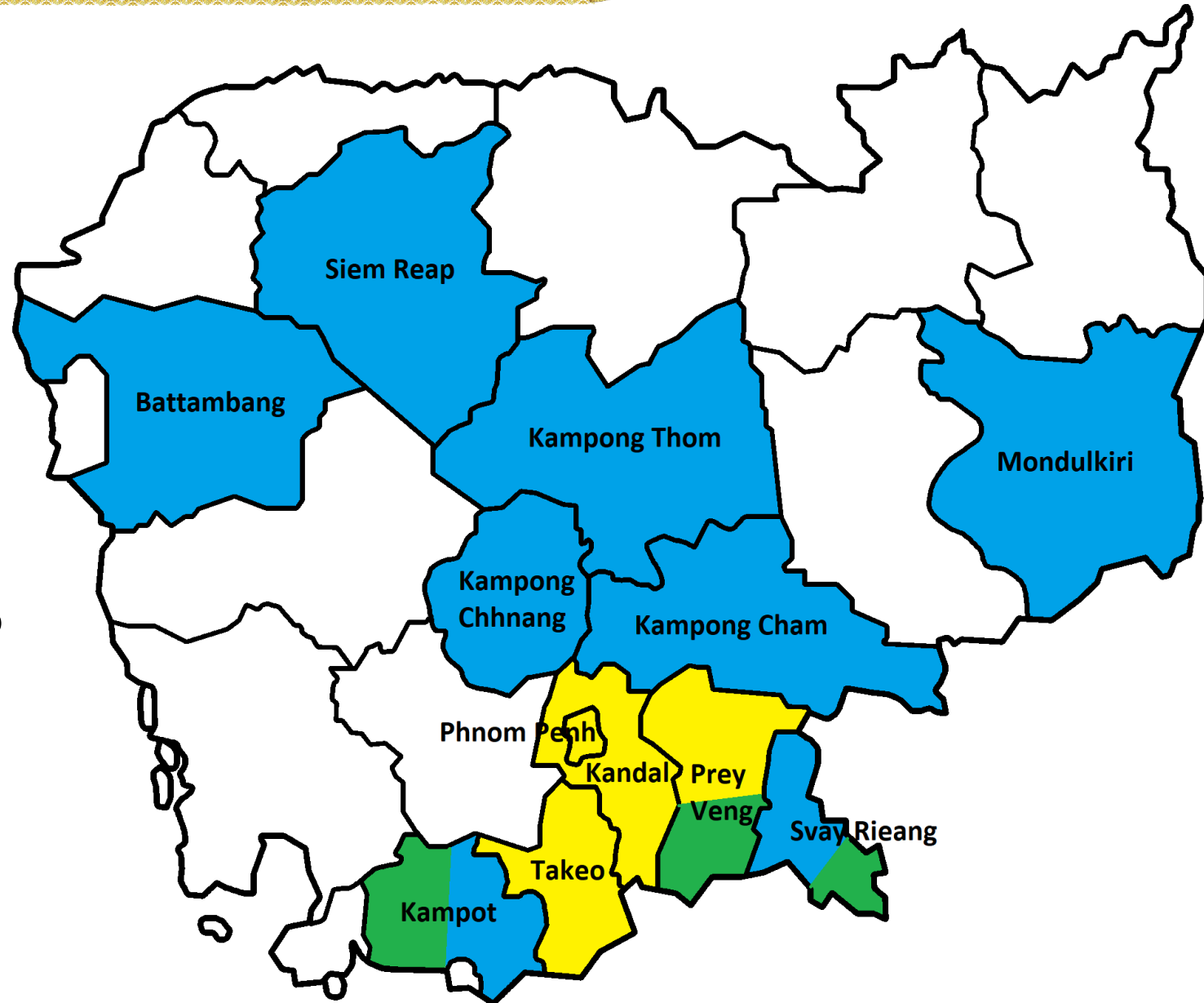
-NAHPRI-IPC (Yellow)

Kandal, Phnom Penh, Prey Veng, Takeo

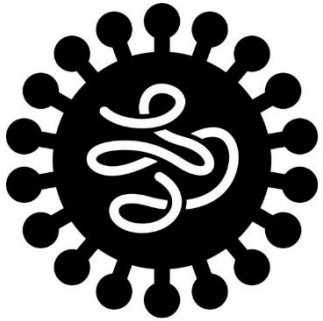
-NAHPRI-NIPH (Green)

Kampot, Kandal and Svay Rieng

-Part of the USAID and USCDC LBM surveillance



Objective



Monitor HPAI in chickens and ducks in high risk areas contributed to the control and eradication of the disease

- Risk based surveillance to identify the HPAIV**
- Monitor HPAI circulated in poultry (revolution and genetic mutation)**



Sample collection and Transportation

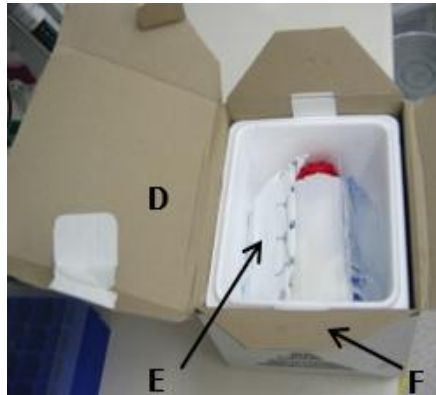
- 20 chickens and ducks from the markets in each province.
- Tracheal and cloacal swabs from each selected chicken and duck.
- Samples were collected within a set schedule (10-17 sampling)



1. Swab sample place in VTM tube



2. Absorption cotton fill full to container



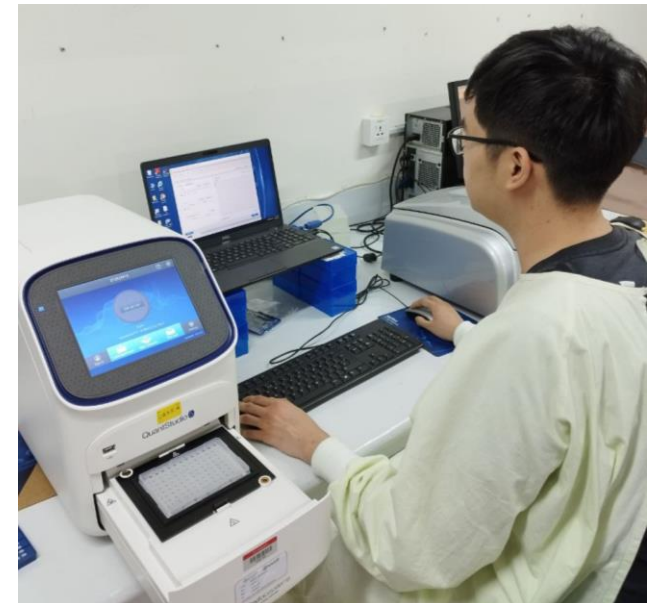
3. Container kept cool in polystyrene box and cover carton box at outer side





Laboratory Analysis

- Sample received and kept in freezer
- Samples were pooled for nucleic acid extraction (5 samples per pool)
- Virus were detected by molecular biology technique (qRT-PCR)
 - M-gene
 - HA-gene (H5, H7 and H9)
 - NA-gene (N1, N2, N6, N8 and N9)
- Sample that positive for M-gene was further tested for subtype.





Characteristic of LBM

- No live poultry sell at the market in Kampong Cham
- A few live poultry sold at the market in Prey Veng
- Characteristic of LBMs are quite similar
 - Live poultry are sold along the pavement
 - Hot stove
 - Defeathering machine or by hand
 - Waste disposed in the rubbish bin





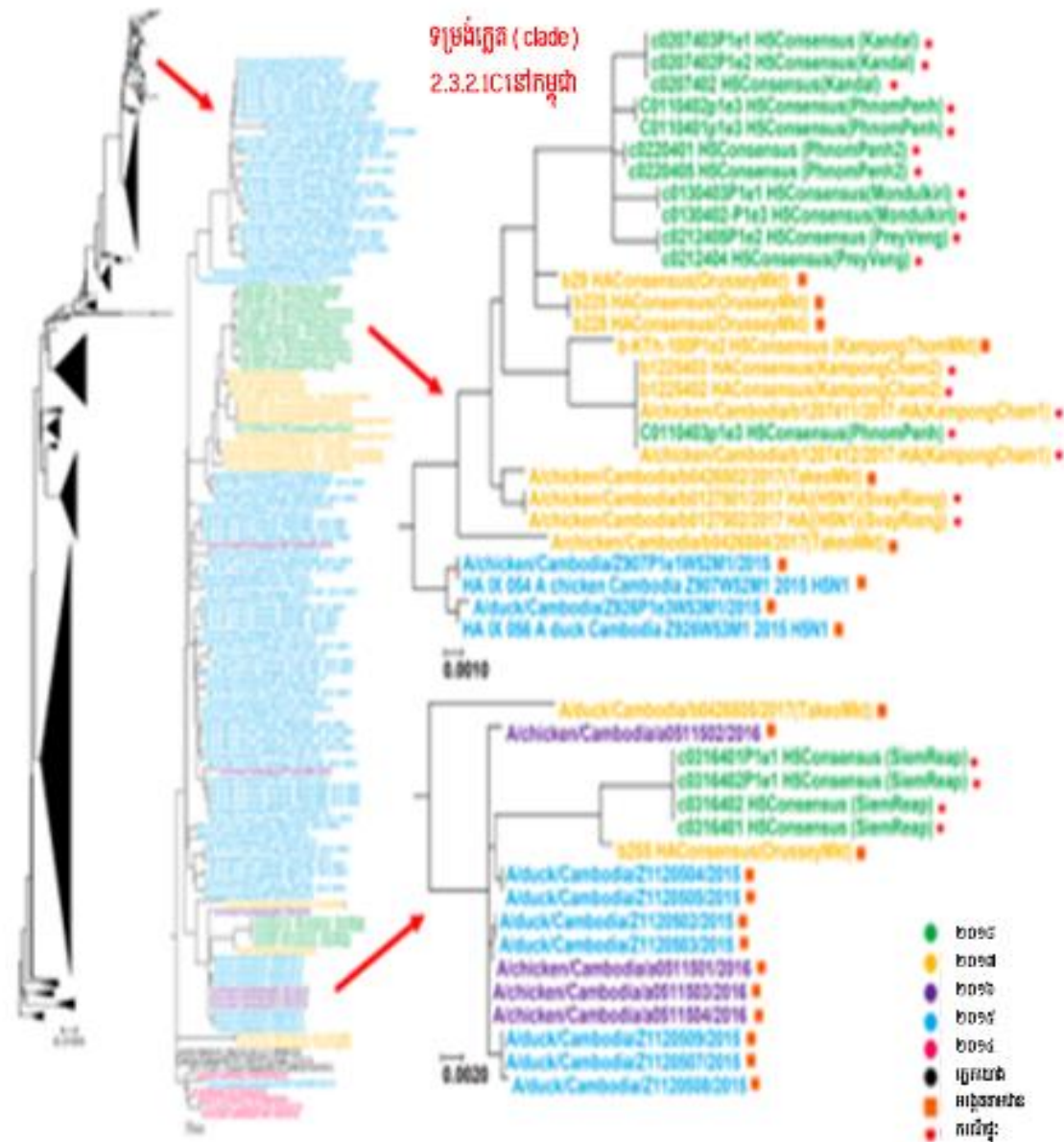
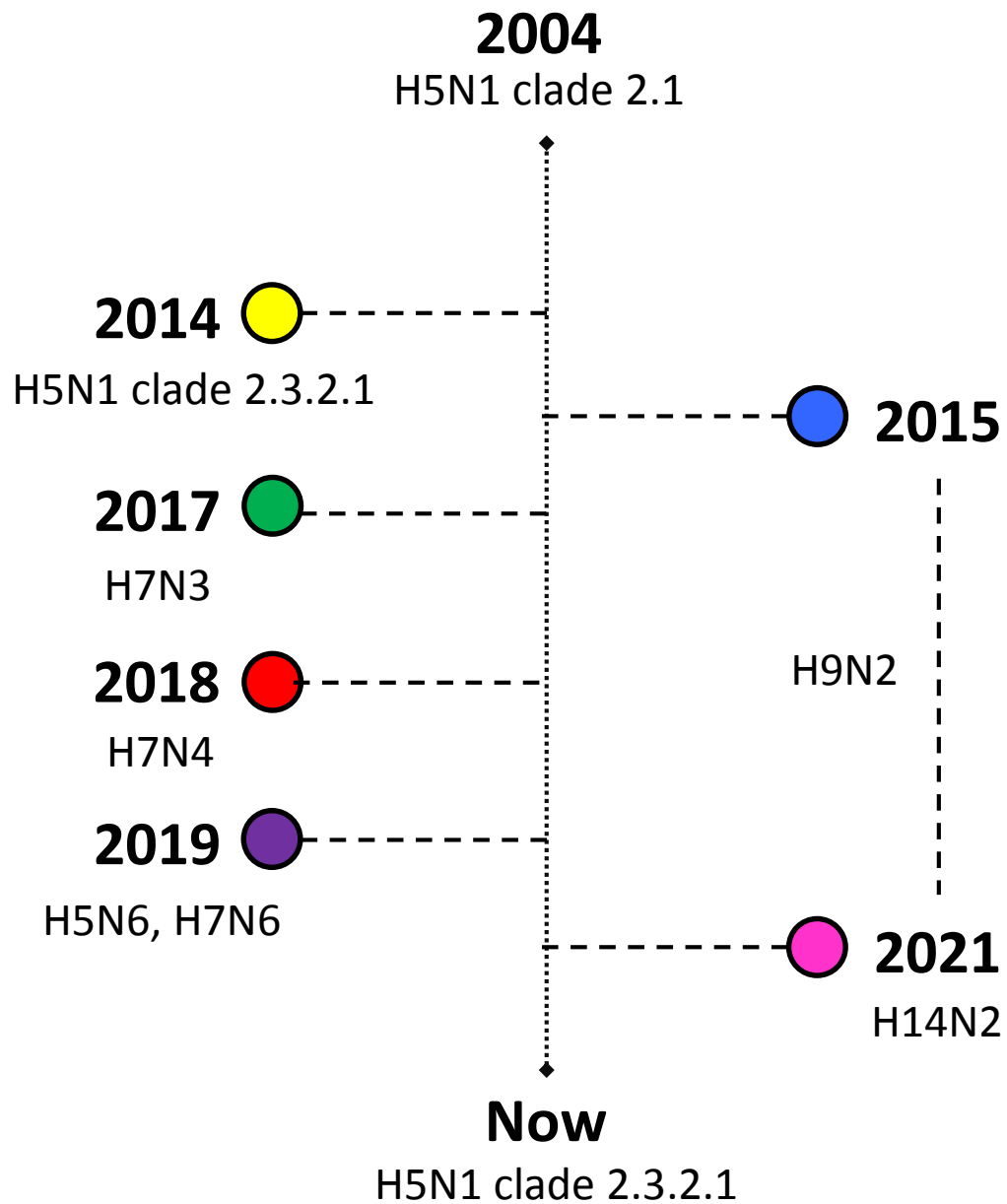
Sources of Poultry

Different districts in the province

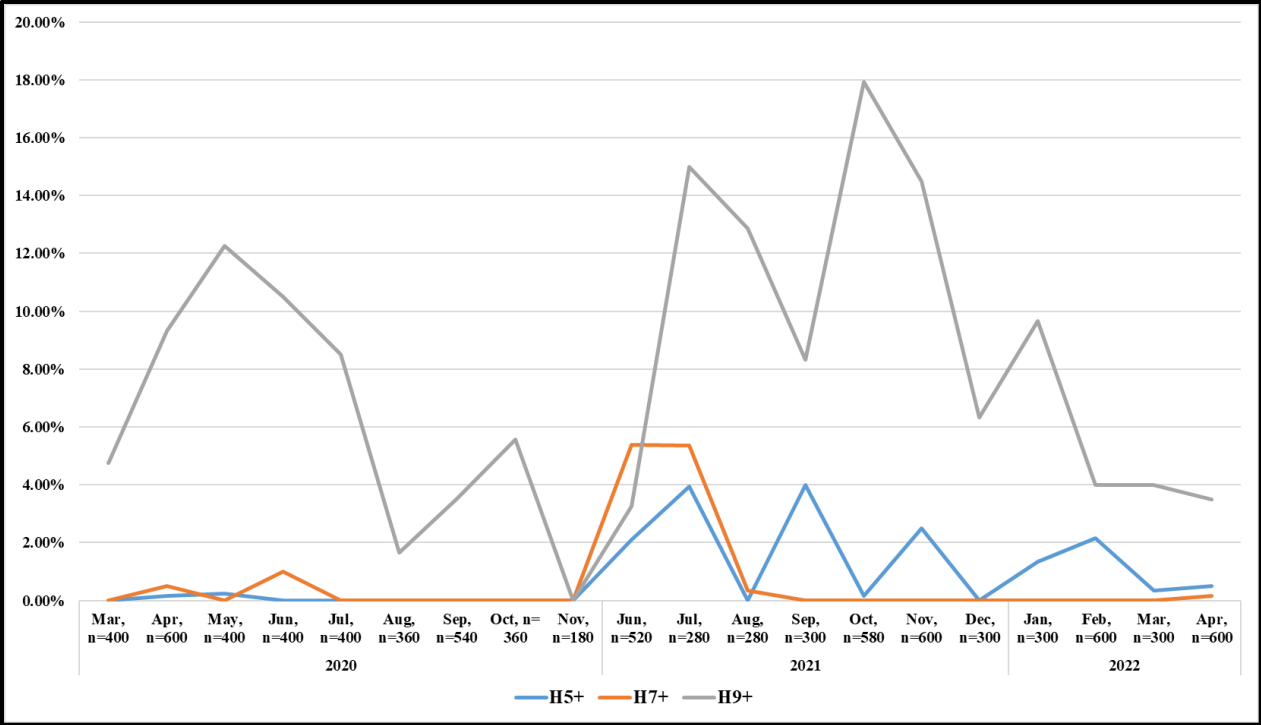
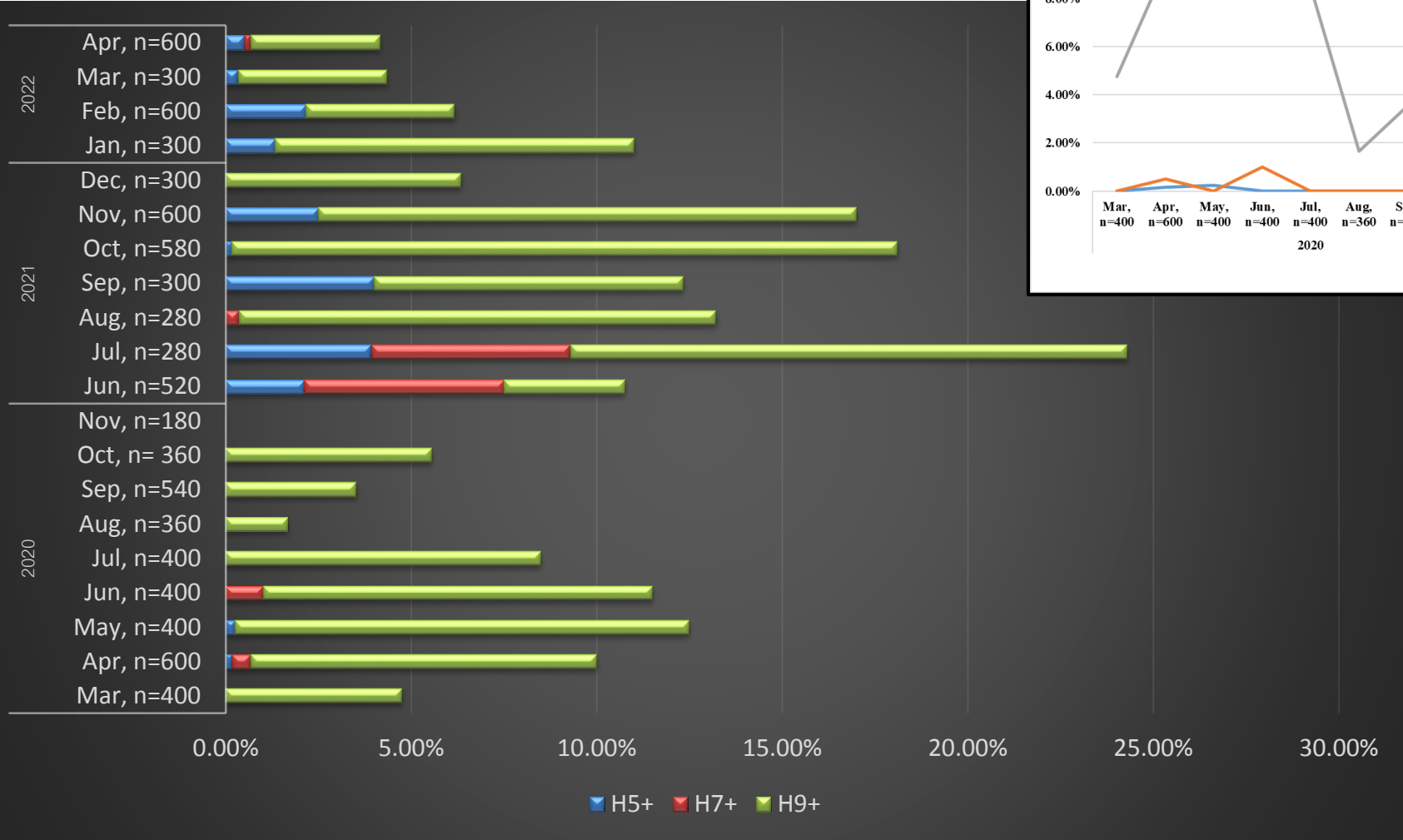
Other provinces

From neighboring country

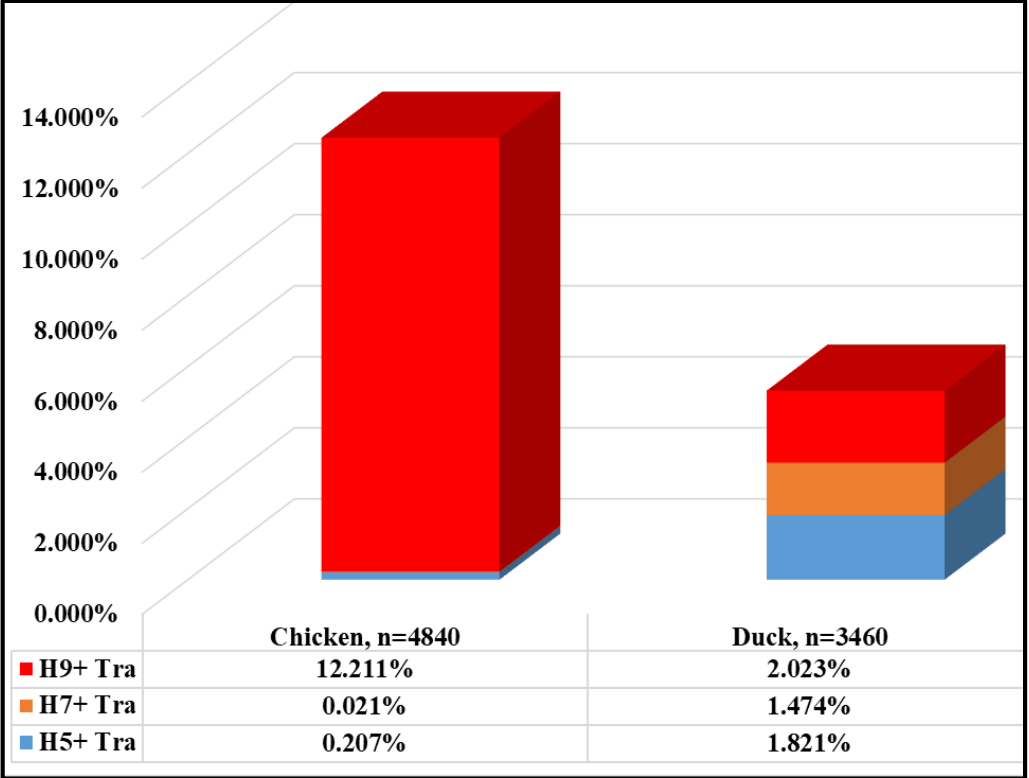
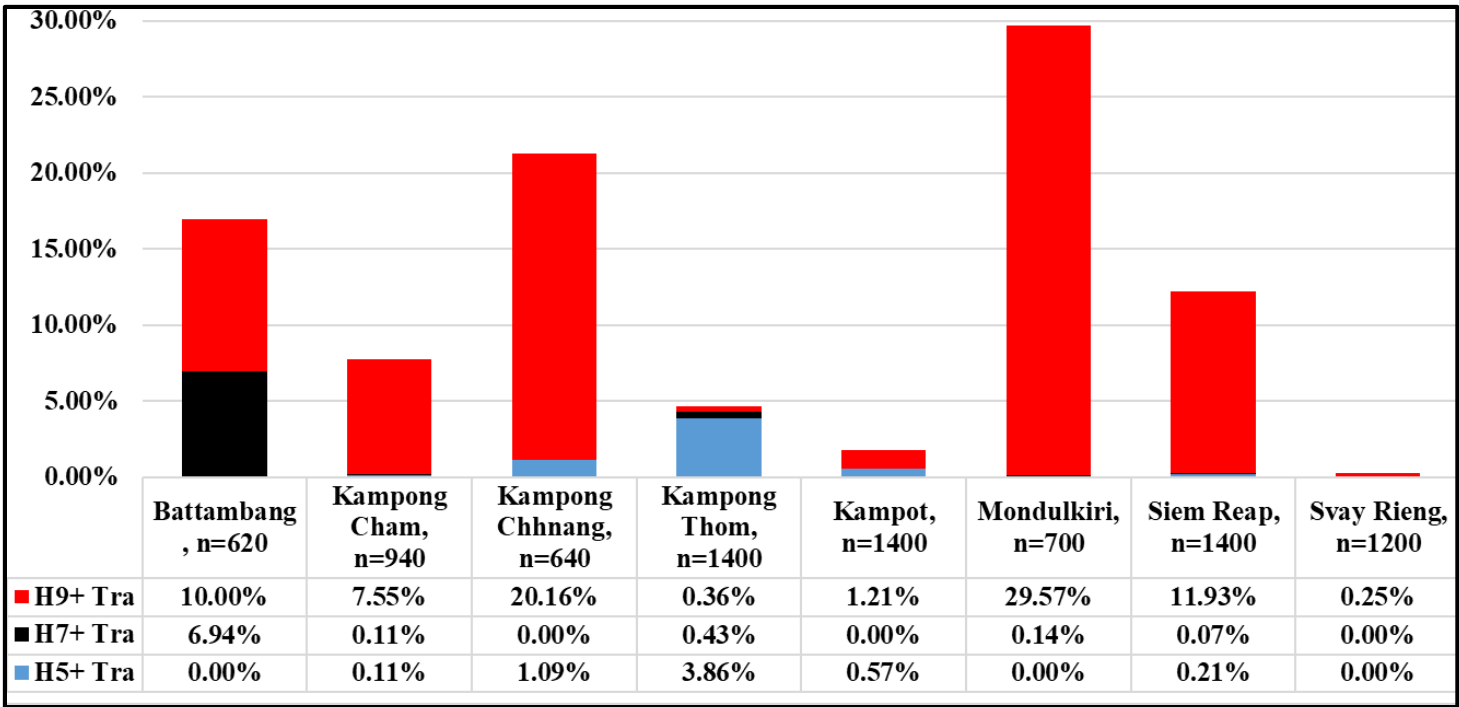
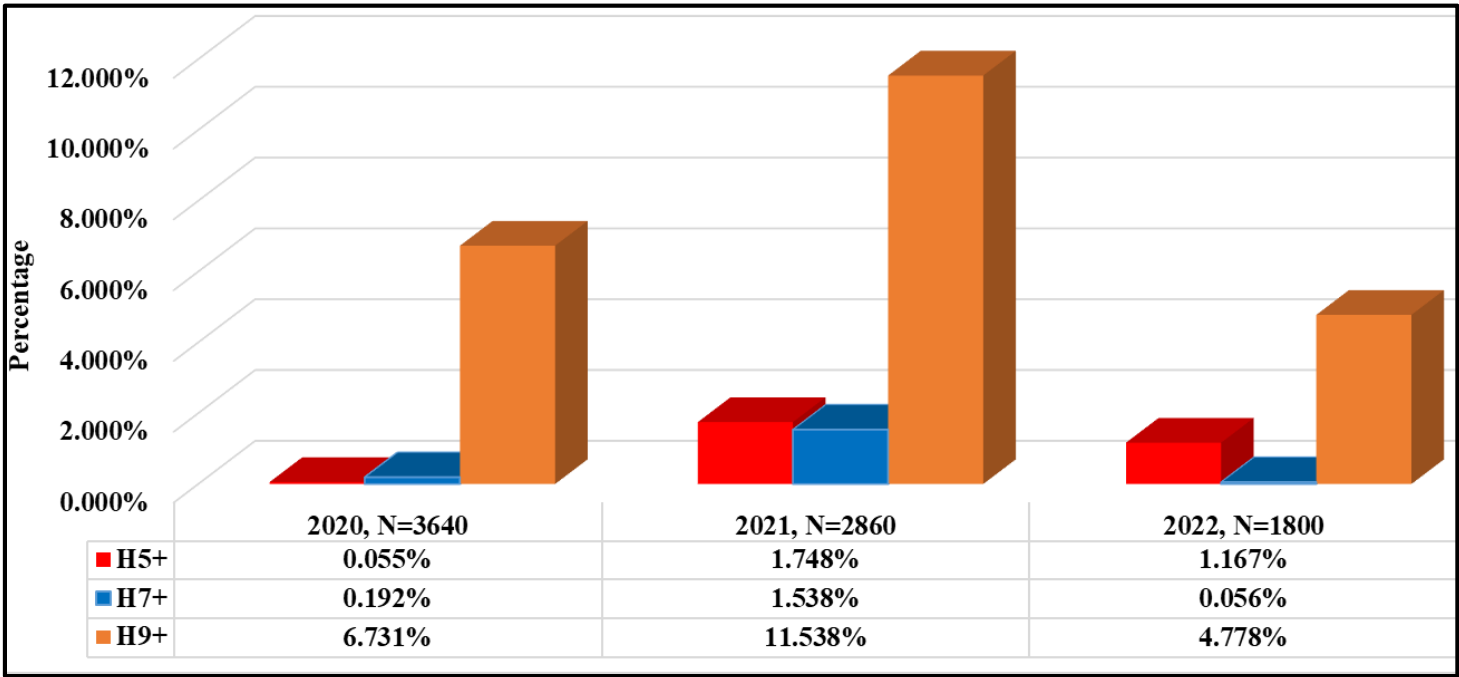
HPAI in Cambodia



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Conclusion

- ☼ HPAIV detected included H5, H7, H9, N1, N2, N6, N8
- ☼ HPAIV isolated from both chicken and ducks
- ☼ Mostly detected during festive seasons
- ☼ Biosecurity at LBMs is a major concern and may pose a risk to highly exposure population including poultry traders and butchers



There are some activities to improve Biosecurity



Obsess illegal transport animal



Quarantine station sterilize



Enhance size of active surveillance



Stick poster avoid of avian influenza



National vaccination program



Outbreak investigation

Thanks for pay attention

