



# Surveillance, Epidemiology, and Guidance Updates for Novel Influenza Viruses

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# Presentation Objective

- Explain the epidemiology of recent novel influenza activity

# Outline

- Surveillance and epidemiology updates
- Guidance updates
- Reminders for when you receive novel flu inquiries

# Surveillance and Epidemiology Updates

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# Novel/Variant Influenza - Humans

	H5N1*	H7N9*	H3N2v**
<b>Cases [n]</b>	842	672	343
<b>Deaths [n (%)]</b>	447 (53%)	271 (40%)	1 (<1%)
<b>Median Age (Age Range)</b>	18 years <sup>†</sup> (0-86 years)	58 years <sup>†</sup> (0-91 years)	7 years <sup>‡</sup> (0-74 years)
<b>% Male Sex</b>	46.9% <sup>†</sup>	68.5% <sup>†</sup>	47% <sup>‡</sup>
<b>First onset</b>	2003	2013	2011
<b>Last onset</b>	2015	2015	2014
<b>Countries with human cases</b>	16 (Asia, M.E., Africa, Canada)	3 (China, Malaysia, Canada)	1 (US)
<b>Exposure(s)</b>	Poultry	Poultry/ bird markets	Swine / agricultural fairs

<sup>†</sup>Qin, Ying, et al. "Differences in the epidemiology of human cases of avian influenza A (H7N9) and A (H5N1) viruses infection." *Clinical Infectious Diseases* (2015): civ345.

<sup>‡</sup>Jhung, Michael A., et al. "Outbreak of variant influenza A (H3N2) virus in the United States." *Clinical infectious diseases* 57.12 (2013): 1703-1712.

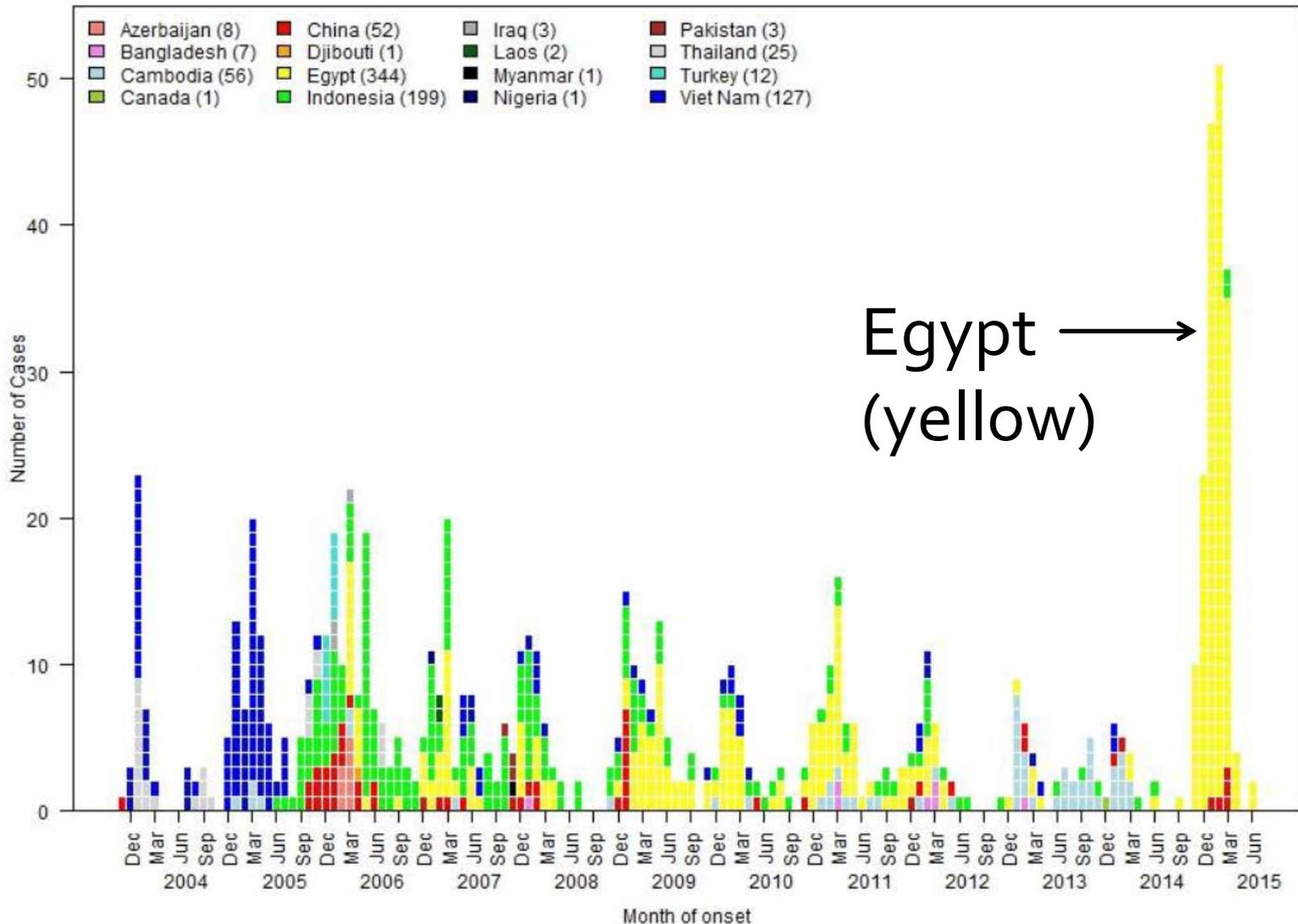
\*As of 6/23/15

\*\*As of 10/24/14

# Influenza A (H5N1)

- Sporadic human infections of H5 expected
- Top 3 countries with H5N1 human cases:
  - Vietnam: 127 cases
  - Indonesia: 199 cases
  - Egypt: 344 cases
    - Different pattern: more females, younger case-patients, fewer fatalities
    - Increase in cases thought to be due to:
      - More people becoming exposed to (infected) poultry
      - “insufficient awareness, behavioral patterns and inadequate precautions”

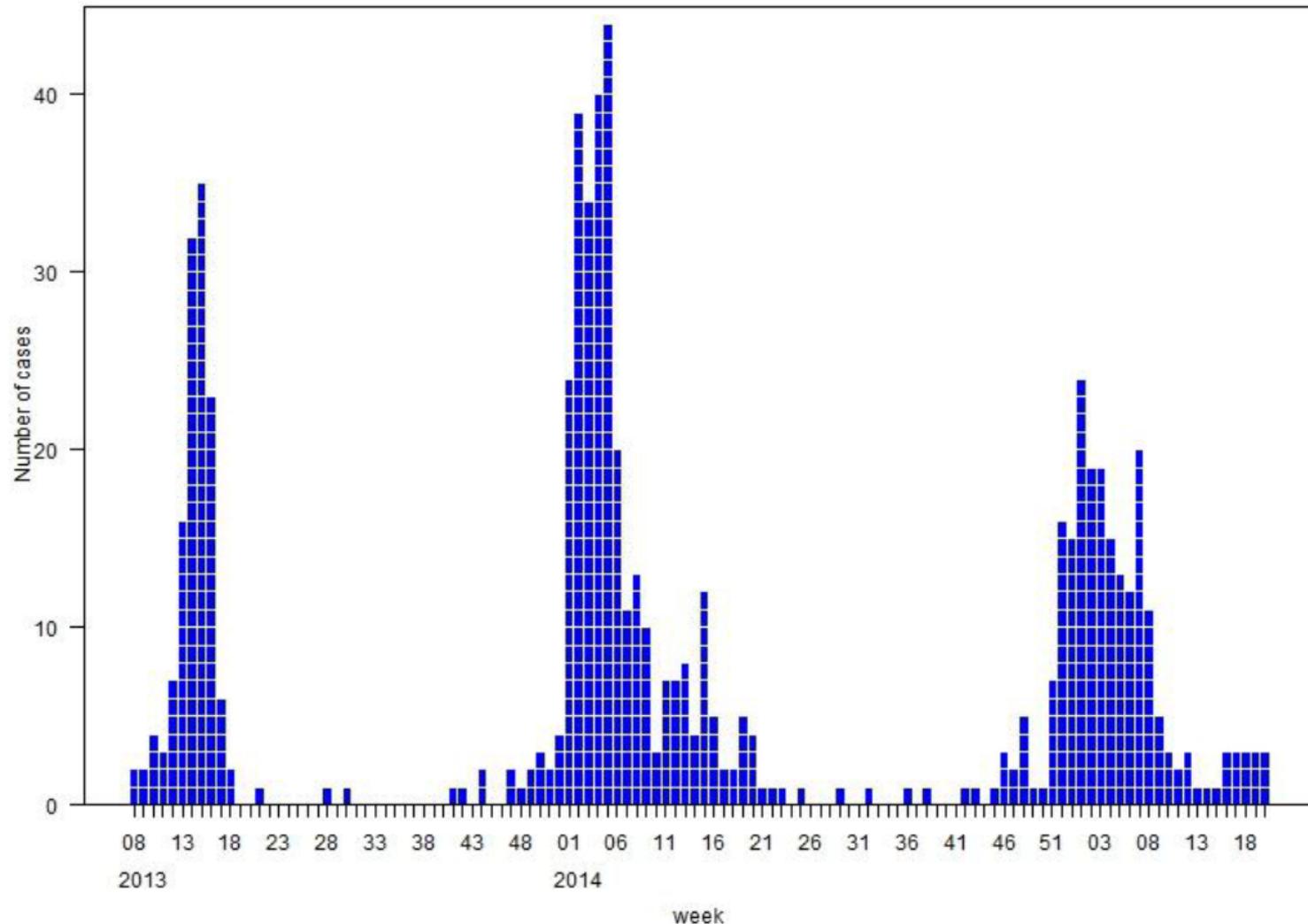
# Number of Confirmed Human H5N1 Cases by Month of Onset, Worldwide (as of 06/23/2015)



# Influenza A (H7N9) – Humans

- Most exposed to infected live poultry, contaminated environments
- Ongoing detection of H7N9 viruses in poultry/environments
- No major genetic changes in the virus
- H7N9 viruses do not transmit easily person-to-person
- No sustained human-to-human transmission
  - 17 family clusters
- A lot we don't know:
  - Animal reservoir(s) in which H7N9 is circulating
  - Main exposures and routes of transmission to humans
  - Distribution and prevalence of H7N9 among people and animals

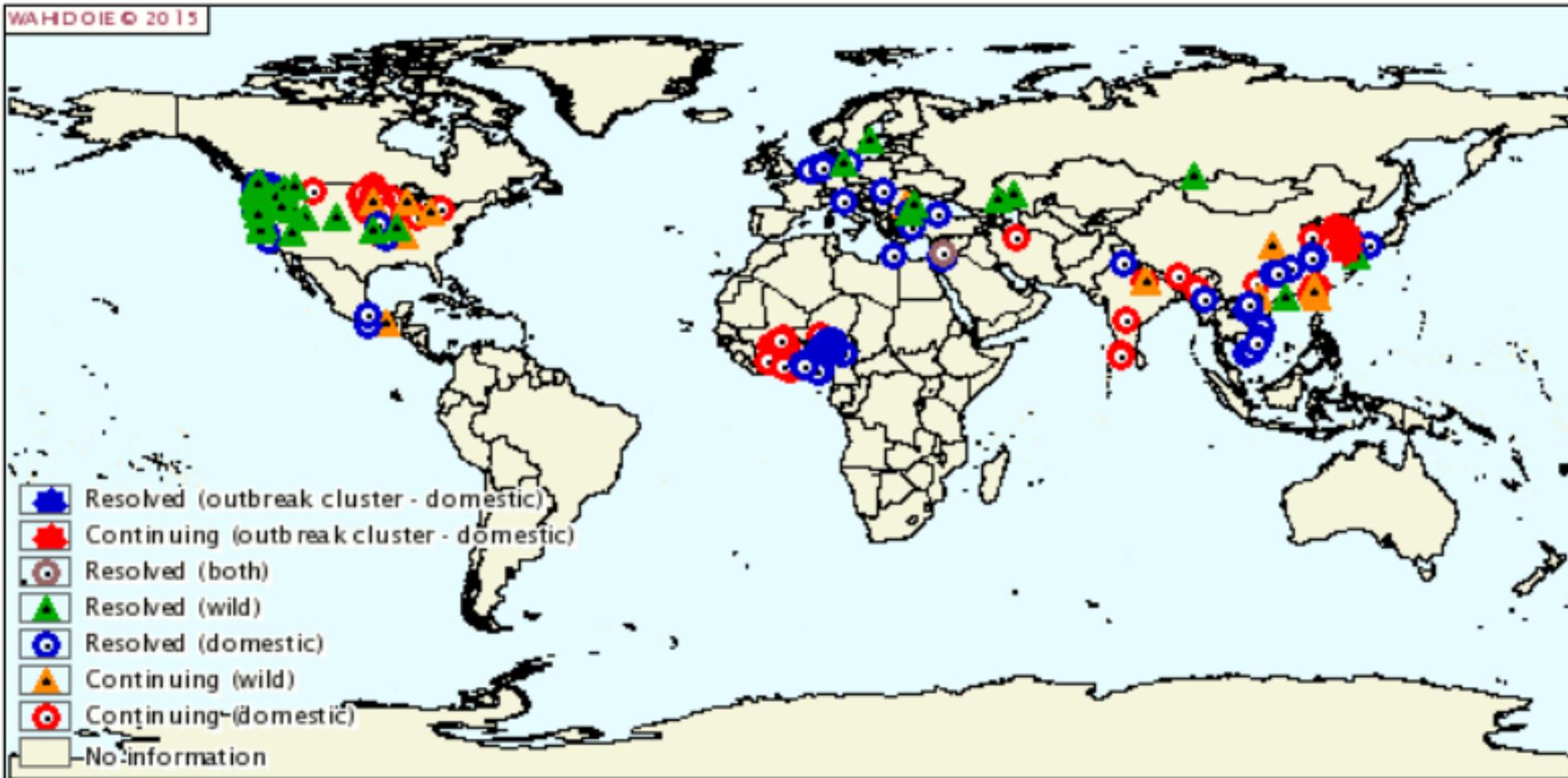
# Number of Confirmed Human H7N9 Cases by Week of Onset, Worldwide (as of 6/15/2015)



# Recent Human Infections with Other Novel Influenza Viruses

- Avian
  - H9N2 (LPAI) – Egypt, mild illness, low impact/risk
  - H5N6 – China, Jan and July 2015, fatalities
- Swine
  - H1N1v
    - Case 1: Minnesota, Oct 2014, swine contact
    - Case 2: Ohio, Apr 2015, fatality, worked at livestock facility
  - H3N2v
    - Case 1: Wisconsin, October 2014, swine contact

# HPAI (H5, H7) Animal Outbreaks, 2015 (as of July 8)



# Guidance Updates

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# Recent Communications

- CDCHAN-00378 (6/2/15): “Bird Infections with Highly-Pathogenic Avian Influenza A (H5N2), (H5N8), and (H5N1) Viruses: Recommendations for Human Health Investigations and Response”
- HAN Highlights:
  - **Consider HPAI** for those with compatible clinical symptoms and exposure history
  - **Investigate** suspected cases
  - **Test** persons meeting clinical and exposure criteria
  - Poultry workers should **use PPE** and limit exposures
  - **Use standard, contact, and airborne precautions** in healthcare settings for suspected HPAI human cases
  - **Consider chemoprophylaxis (treatment dosage)** for those with appropriate exposures
  - **Monitor symptoms** for persons exposed to HPAI infected birds/environments
  - **Promptly evaluate and treat** ill persons with compatible exposure history

# Organization of CDC's guidance

- Main webpage for healthcare professionals:  
<http://www.cdc.gov/flu/avianflu/healthprofessionals.htm>
- Guidance divided into:
  - Novel Influenza A Viruses **with the Potential to Cause Severe Disease in Humans** (e.g., H5N2)
  - Novel Influenza A Viruses **Associated with Severe Disease in Humans** (e.g., H5N1, H7N9)

# Case Definitions

- H5N1:

<http://www.cdc.gov/flu/avianflu/h5n1/case-definitions.htm>

- H7N9:

<http://www.cdc.gov/flu/avianflu/h7n9/case-definitions.htm>

# Case Under Investigation (CUI)— H5N1 and H7N9

- Compatible illness AND exposure criteria AND laboratory confirmation is not known or pending OR test results do not provide a sufficient level of detail to confirm avian influenza A (H5N1) or (H7N9) virus infection.
  - Exposure Criteria
    - Patients with recent travel (within 10 days of illness onset) to areas with recent human cases of H5N1 or H7N9, or known circulation of H5N1 or H7N9 virus in animals
  - OR
  - Patients with recent close contact (within 10 days of illness onset) with confirmed or suspected human cases H5N1 or H7N9
- OR
- Unprotected lab exposure to live H5N1 or H7N9 virus

# Specimen Collection, Processing, Testing Instructions

- Patients with Suspected Infection with Novel Influenza A Viruses **Associated with Severe Disease in Humans:**  
<http://www.cdc.gov/flu/avianflu/h7n9/specimen-collection.htm>
- Patients with Suspected Infection with Novel Influenza A Viruses **with the Potential to Cause Severe Disease in Humans:**  
<http://www.cdc.gov/flu/avianflu/severe-potential.htm>

# Specimen Collection, Processing, Testing Instructions

- Preferred specimen: NP swab, or nasal aspirate or wash, or combined NP/OP swabs
  - Lower respiratory tract specimen is preferred if patient has lower respiratory tract illness
    - E.g., endotracheal aspirate, bronchoalveolar lavage fluid
  - Best practice: If patient has LRTI, collect upper + lower respiratory tract specimens
- Collect multiple respiratory specimens from different sites on at least 2 consecutive days

# Infection Control Guidance

- Major restructuring of guidance
- Title: “Interim Guidance for Infection Control Within Healthcare Settings When Caring for Confirmed Cases, Probable Cases, and Cases Under Investigation for Infection with Novel Influenza A Viruses Associated with Severe Disease”: <http://www.cdc.gov/flu/avianflu/novel-flu-infection-control.htm>
- Use this guidance for all suspected or known novel influenza virus infections

# Infection Control Guidance – Highlights

- Similar to MERS infection control guidance
- Promptly screen and triage patients; call ahead
- Standard, contact, and airborne precautions recommended
  - PPE: glove, gown, goggles, respirator
- Patient placement: Airborne infection isolation room
- Track close contacts, all HCP, visitors
- Monitor activity of severe respiratory infection in the healthcare setting

# DSHS Investigation Guidelines

- July 2015 update to DSHS EAIDB Investigation Guidelines for Novel/Variant Influenza
- Updated:
  - Definitions
  - Case Investigation Checklist
  - Control Measures
  - Laboratory Procedures

# Reminders and Other Updates

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# When a Novel Human Case is Suspected

- Implement or reinforce infection control measures
- Evaluate the patient for testing
  - Consult CDC's "Case Under Investigation" (CUI) criteria for H5N1, H7N9, and novel flu A with the potential to cause severe disease in humans
  - **If CUI criteria are met, test patient for novel flu at a public health lab**
- Provide instructions on specimen types, collection, packaging, and shipping
  - See EAIDB Investigation Guidelines, CDC website
- Complete the General Influenza Investigation Form + Influenza Investigation Form Supplemental Pages (pages 1&2) → DSHS website

# When a Novel Human Case is Confirmed

- Verify lab result and report case
- Implement or reinforce control measures
- Thoroughly investigate case
  - Exposures (e.g., travel, events, animals)
  - Contact tracing (may include testing)
- Work with public health partners (e.g., TAHC, CDC) as necessary
- Increased surveillance around case
- Increased communication

# Lab Testing for Novel Flu

- Testing for suspected novel flu should always be done/confirmed at a public health lab (PHL)
  - Texas PHL = DSHS Austin or one of the LRN labs
- All Texas PHLs use the CDC RT-PCR Seasonal Flu assay
- CDC RT-PCR Seasonal Flu assay should detect any novel influenza virus, including H7N9, H5N1, H5N2, etc. (unsubtypeable result)

# Questions?

