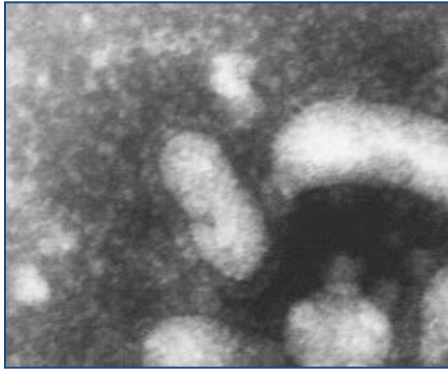


Report from the Subcommittee on Avian Influenza and Newcastle Disease



Zoonotic Avian Influenza

- Both LPAI and HPAI can infect humans
- Recent LPAI zoonotic reports
 - H7N9 China
 - H10N8 China
 - H6N1 Taiwan
 - H9N2 Hong Kong
- Recent HPAI
 - H7N7 Italy
 - H7N3 Mexico
 - H5N1 China, Egypt, Vietnam, Indonesia, Cambodia
 - H5N6 China

Disease Presentation

- Conjunctivitis occasionally with additional symptoms including upper respiratory symptoms with influenza-like illness
 - H7N7 Italy HPAI
 - H7N3 Mexico HPAI
 - H9N2 Hong Kong (elsewhere) LPAI
- Severe respiratory disease with pneumonia often leading to high case fatality rate
 - H5N1 several countries (HPAI)
 - H7N9 China (LPAI)
 - H5N6 China (HPAI)

Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2014

Country	2003-2009*		2010		2011		2012		2013		2014		Total	
	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths	cases	deaths
Azerbaijan	8	5	0	0	0	0	0	0	0	0	0	0	8	5
Bangladesh	1	0	0	0	2	0	3	0	1	1	0	0	7	1
Cambodia	9	7	1	1	8	8	3	3	26	14	9	4	56	37
Canada	0	0	0	0	0	0	0	0	1	1	0	0	1	1
China	38	25	2	1	1	1	2	1	2	2	2	0	47	30
Djibouti	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Egypt	90	27	29	13	39	15	11	5	4	3	3	0	176	63
Indonesia	162	134	9	7	12	10	9	9	3	3	2	2	197	165
Iraq	3	2	0	0	0	0	0	0	0	0	0	0	3	2
Lao People's Democratic Republic	2	2	0	0	0	0	0	0	0	0	0	0	2	2
Myanmar	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Nigeria	1	1	0	0	0	0	0	0	0	0	0	0	1	1
Pakistan	3	1	0	0	0	0	0	0	0	0	0	0	3	1
Thailand	25	17	0	0	0	0	0	0	0	0	0	0	25	17
Turkey	12	4	0	0	0	0	0	0	0	0	0	0	12	4
Viet Nam	112	57	7	2	0	0	4	2	2	1	2	2	127	64
Total	468	282	48	24	62	34	32	20	39	25	18	8	667	393

* 2003-2009 total figures. Breakdowns by year available on next table

Total number of cases includes number of deaths
WHO reports only laboratory cases
All dates refer to onset of illness

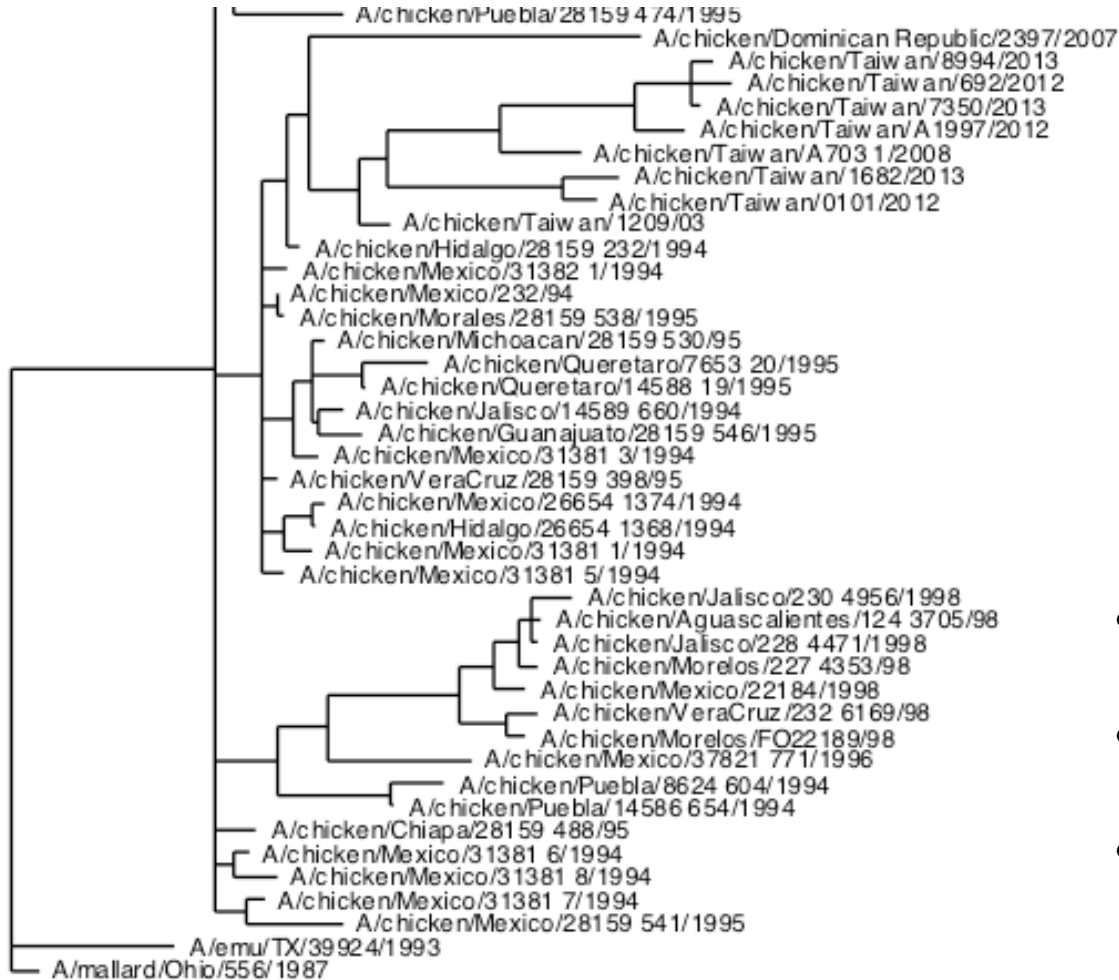
Other Notable H5N1 Events

- OIE Reports H5N1
 - Egypt, Indonesia, Vietnam and China-Endemic
 - Cambodia-ducks
 - India-crows
 - Libya-backyard chickens and ducks (Egypt-like virus)
 - North Korea-commercial chickens
 - Nepal-chickens
 - Russia-backyard chickens, ducks, and geese

Other H5 HPAI Events

- OIE Reports H5N6 (reassortant)
 - China, Laos, Vietnam Clade 2.3.4
 - Concern because of detection of unique reassortant in 3 countries
- OIE Reports H5N8 (reassortant)
 - South Korea-primarily ducks but also chickens –ongoing for over 9 months
 - Japan-chickens-resolved
- OIE Reports H5N2 (reassortant)
 - China
- OIE Reports H5N2
 - Mexican lineage H5N2 reassortant with Asian H6N1

Taiwan H5N2



RKKR/GLF LPAI
RRKR/GLF HPAI

- The molecular sequence does not match IVPI
- Authorities did not report based on sequence
- OIE definition requires by IVPI or sequence

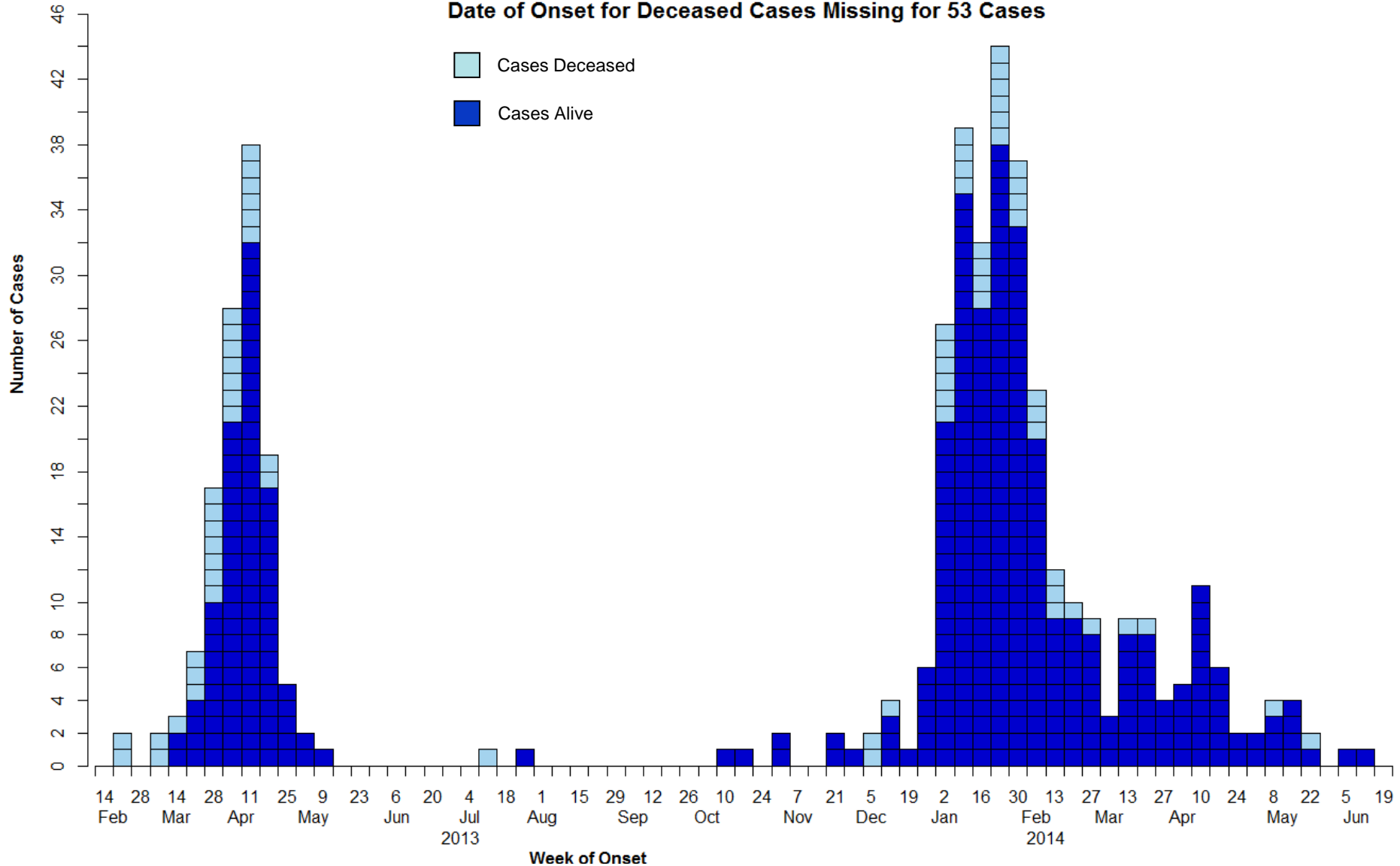
— 10 changes

Cases of H7N9 Influenza in China by Week of Onset (Aug 4, 2014)

452 Total Cases: 124 Deaths

Date of Onset Missing for 10 Cases

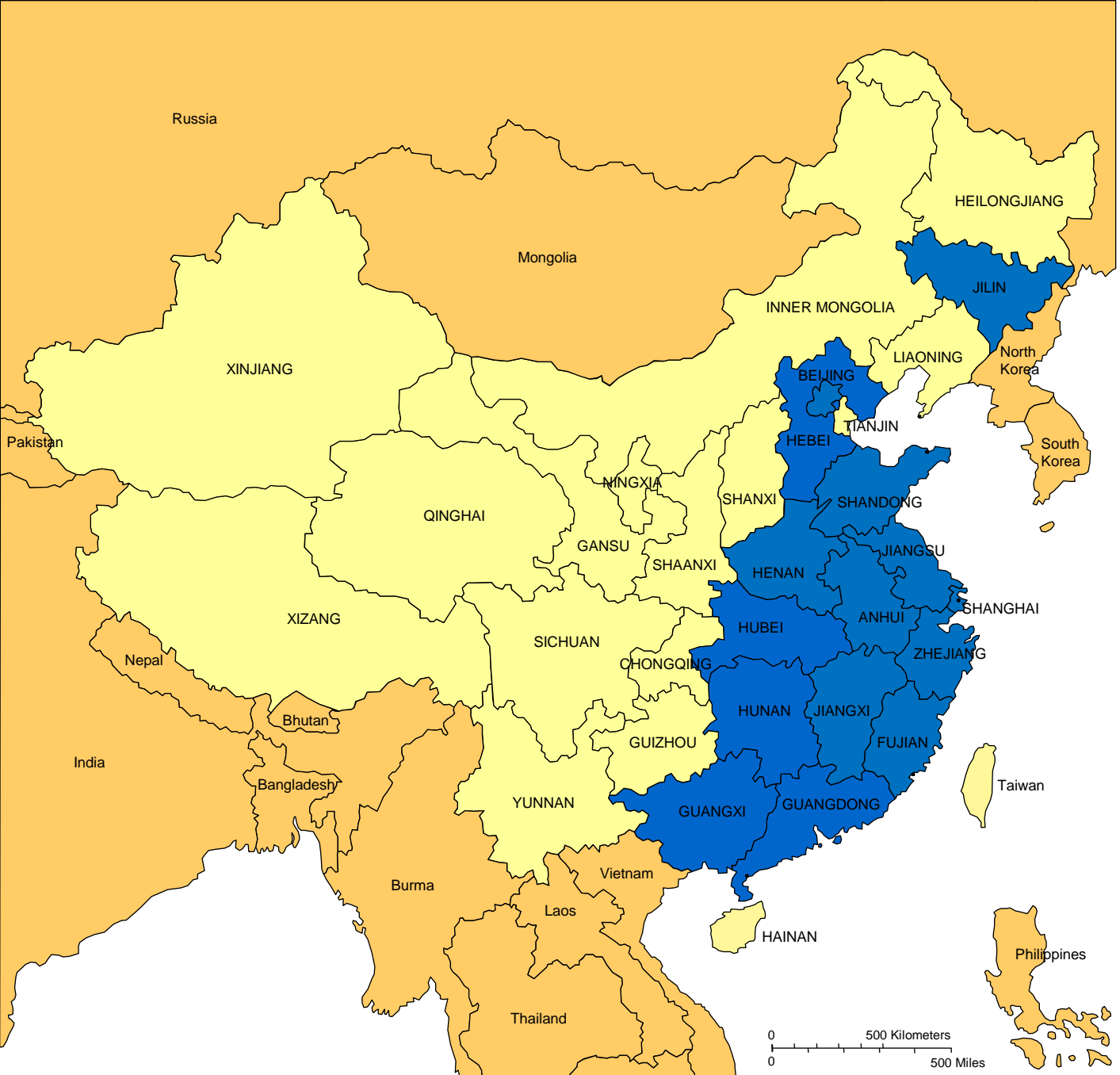
Date of Onset for Deceased Cases Missing for 53 Cases



Location of H7N9 Influenza in China (8/4/14)*

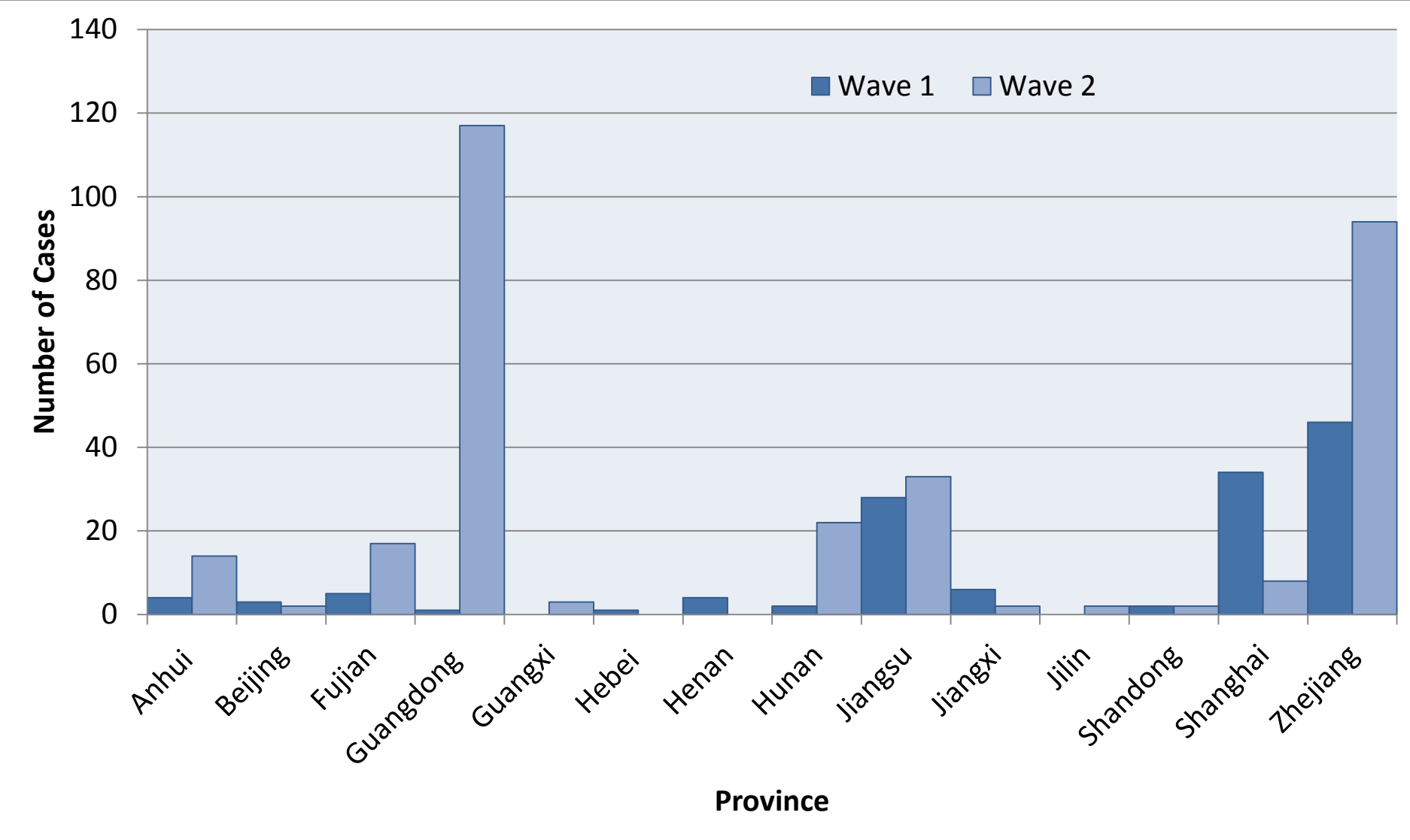
*452 total cases/124 deaths

Province/ City	Number of Cases
Anhui	18
Beijing	5
Fujian	22
Guangdong	118
Guangxi	3
Hebei	1
Henan	4
Hunan	24
Jiangsu	61
Jiangxi	8
Jilin	2
Shandong	4
Shanghai	42
Zhejiang	140



0 500 Kilometers
0 500 Miles

Cases of H7N9 Influenza by Wave (8/4/14)*



*Total cases = 452



Center for Infectious Disease Research & Policy

UNIVERSITY OF MINNESOTA

H7N2 HPAI Australia

- Outbreak New South Wales reported Oct 10, 2013
- Single farm -Free range and caged layer chickens
- 18,000 dead in a population of 470,000
- Farm depopulated
- Source-suspected wild birds
- Outbreak resolved



Emergence of New Sub-Genotypes of Virulent Newcastle Disease Virus with Panzootic Features

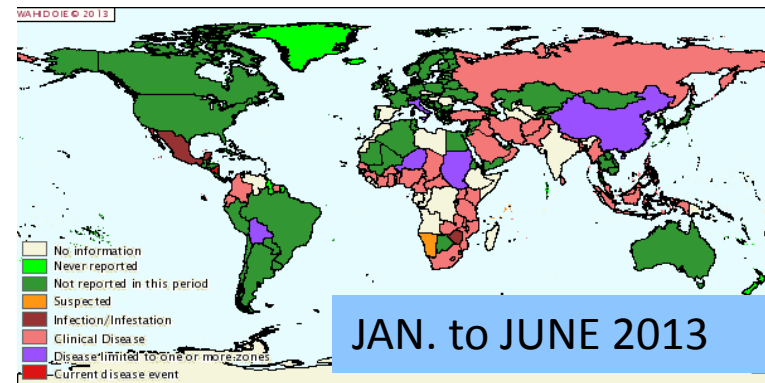
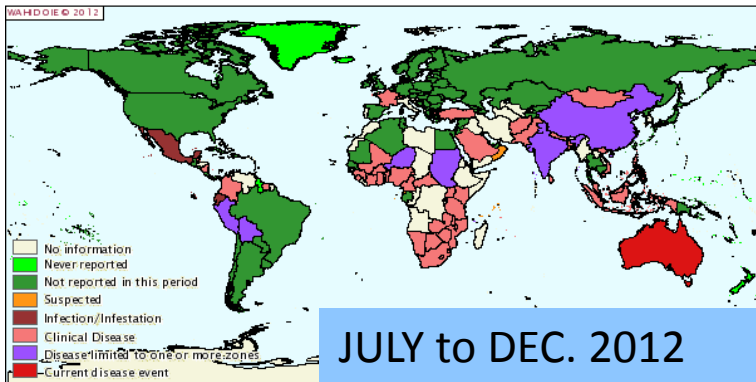
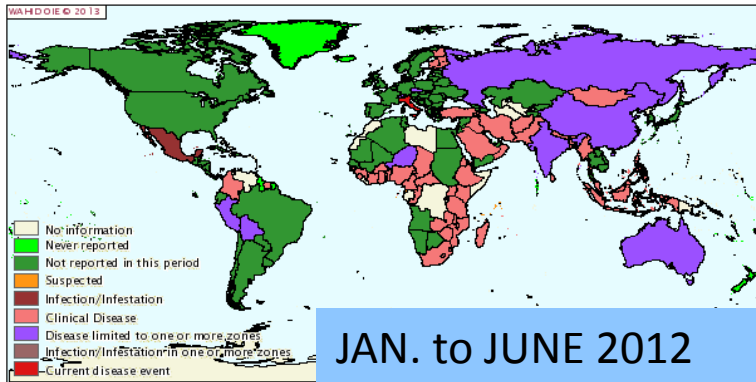
PJ Miller, T Bubu, R Haddas, TA Khan, N Mukhar, SF Rehmani, S Setiyaningsih, A Wajid, T Yaqub, MN Zahid & CL Afonso*

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Southeast Poultry Research Laboratory, USDA/ARS, Athens, GA



OUTBREAK DATA FROM OIE

Jan 2012-June 2013



Newcastle disease 2013-2014 WORLDWIDE

- 68 countries reporting outbreaks in domestic poultry.
- Four countries with ongoing outbreaks

OUTBREAKS

ISRAEL- 58 (2012), 20 (2013)

PAKISTAN- all months (2012),

Jan- June (2013). No data > July 2013

INDONESIA-All administrative divisions (23) – every month (Jan '12-June '13)

For comparison: combine HPAI & LPAI data for the same reporting time:

- 17 countries reporting outbreaks in domestic poultry.
- Six countries with ongoing outbreaks: (2 HPAI, 2 LPAI, 2 both)
- Human Infection with mortality

ND Panzootics

Panzootic- Animal infectious disease spreads across a large area; continent or world. (human/pandemic)

Four ND panzootics

- 1) 1926 Indonesia/England; genotypes II, III, IV
- 2) 1963-1970s Middle east/Europe/America; genotype V, associated w/psittacines. USA (CA) 2002, cormorants Canada/USA 2008
- 3) 1960s “variant NDV” from pigeons N. Africa or Middle East → world wide
- 4) 1980s Asia – genotype VII → Africa, Western Europe, South America (2008) chickens, geese, ducks



NDV isolates

- Pakistan (n= 16); poultry swabs samples from 16 outbreaks in different regions of the country; October 2011 - March 2012
- Israel (n = 33); diagnostic cloacal & tracheal swabs from poultry & pet birds [Kimron Veterinary Institute]
- Indonesia (n =14); diagnostic swab samples from live bird markets or poultry handling facilities. [Vet. Med. Department, Bogor Ag. Univ.]. Five Islands (Sumatra, Kalimantan, Java, Bali, & Nusa Tenggara) represented.
- NDV strains (n= 3) cockatoo/Indonesia/87-36724-524/1988; lory/Indonesia/88-08989-523/1988 & parrot/Indonesia/C300 (19625)-520/1976; repository of USDA/SEPRL (ancestral)
- ICPI (~14) & MDT (~32): most velogens, some mesogens. “RRQKRF”

Figure 1: Three New Sub-genotypes



Conclusions

Recently characterized vNDV strains that are highly genetically related from three countries (Israel, Pakistan & Indonesia) that do not share common borders represent the potential for the emergence of a fifth panzootic of ND. Oldest isolates from Indonesia.



9th International Symposium on Avian Influenza

- Sunday, April 12, 2015 - Wednesday, April 15, 2015
- Abstracts must be submitted by December 1, 2014
- Peer reviewed manuscripts in Avian Diseases
- Follow up meeting 3rd International Symposium on Neglected Influenza Viruses April 15-17 2015