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"One Health" Avian Influenza
 Lunchtime Seminar
 Friday 19 August 2011

H5N1 in human beings and other
 influenza viruses of this season

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H5N1 avian influenza: Timeline of major events

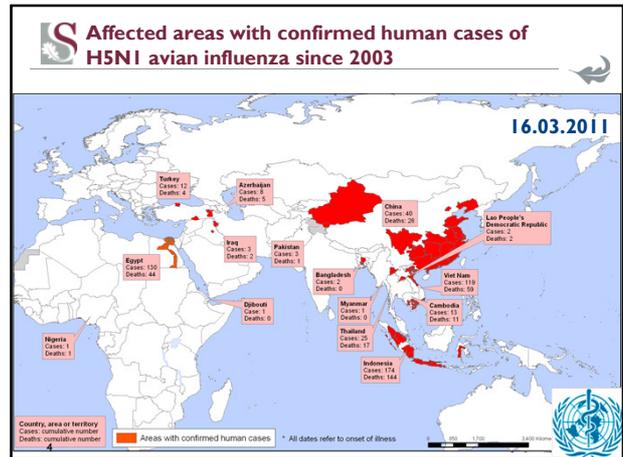
- 1996** Highly pathogenic H5N1 virus isolated from farmed goose in Guangdong Province, China
- 1997** Outbreaks of HPAI H5N1 reported in poultry at farms and live animal markets in Hong Kong
First known human infections with HPAI H5N1: 18 cases (6 fatal) in Hong Kong
- Feb 2003** Two human cases (one fatal) confirmed in Hong Kong family after travel to Fujian Province, China. 3rd family member dies but not tested
- 25 Nov 2003** Fatal human case in a 24-year-old man from Beijing. First attributed to SARS, retrospectively confirmed in August 2006
- Dec 2003 – Jan 2004** Two tigers and two leopards, fed on fresh chicken carcasses, die at a zoo in Thailand. 1st report of influenza disease and death in big cats




H5N1 avian influenza: Timeline of major events

- 11 Jan 2004** H5N1 identified as cause of severe respiratory disease with high fatality in Vietnam. Sporadic human cases reported through mid-March.
- 19 Jan 2004** Hong Kong reports H5N1 in dead wild bird (1st report in birds since poultry outbreak in 1997)
- 23 Jan 2004** Thailand first reports H5N1 in poultry and 2 laboratory-confirmed cases of human infection. Sporadic human cases reported through mid-March
- 1 Feb 2004** Investigation of family cluster of H5N1 cases in Vietnam in early January cannot rule out limited human-to-human transmission

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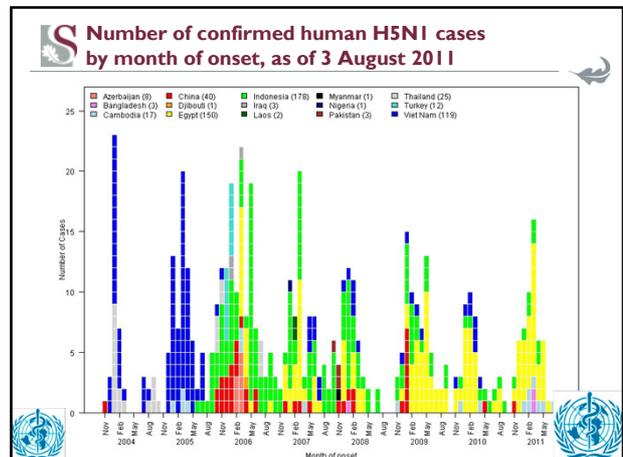

Cumulative number of confirmed human cases of avian influenza A/(H5N1) reported to WHO

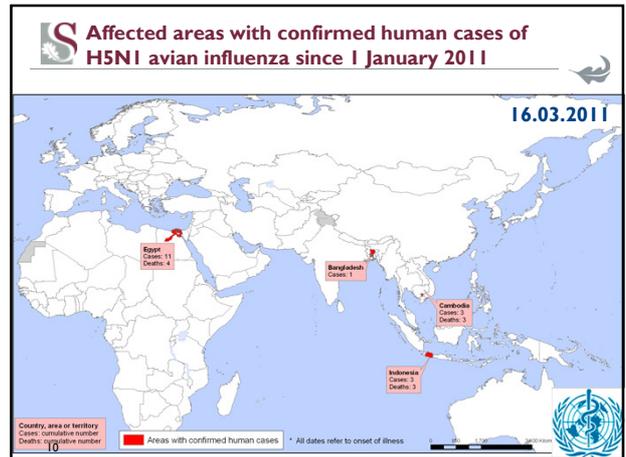
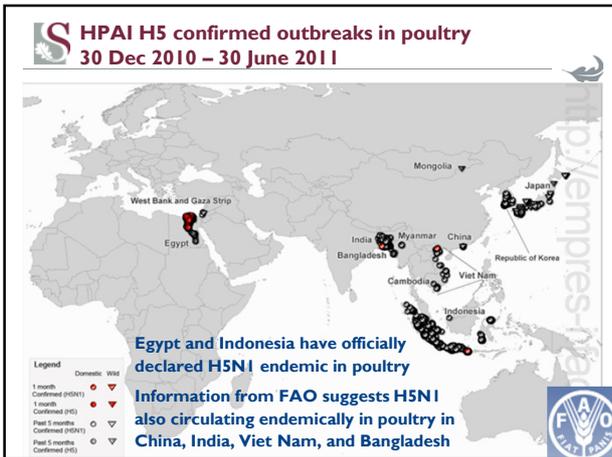
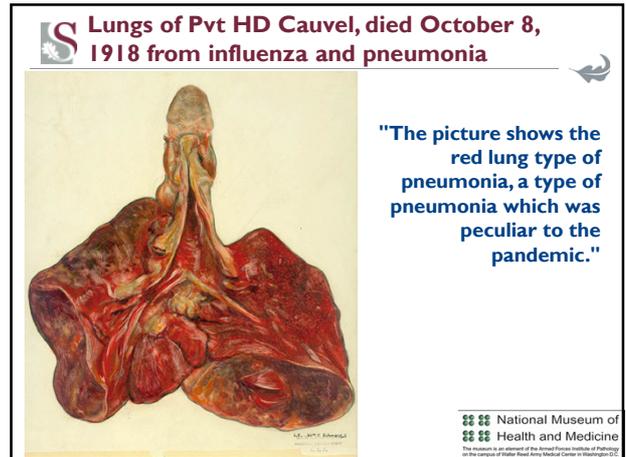
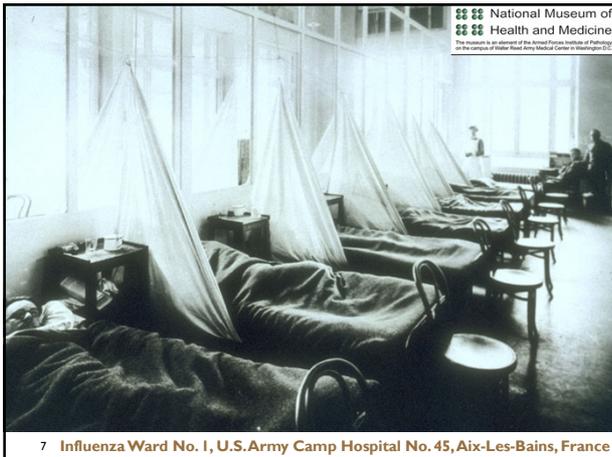
9 August 2011

Country	Total cases *	Deaths
Viet Nam	119	59
Thailand	25	17
Cambodia	17	15
Indonesia	178	146
China	40	26
Turkey	12	4
Iraq	3	2
Azerbaijan	8	5
Egypt	151	52
Djibouti	1	0
Nigeria	1	1
Laos	2	2
Burma	1	0
Pakistan	3	1
Bangladesh	3	0
Total	564	330

† 58.5% !

* Total number includes deaths.
 WHO reports only laboratory-confirmed cases.



S Recent zoonotic influenza virus infections: A(H5N1), A(H9N2), swine A(H1N1), swine A(H3N2)

- From 27 September 2010 to 9 February 2011, 14 confirmed human cases of A(H5N1), 6 of which were fatal, were reported from Cambodia, China Hong Kong SAR, Egypt and Indonesia, where highly pathogenic avian influenza A(H5N1) is present in poultry or wild birds.
- Since December 2003, a total of 520 cases with 307 deaths have been confirmed in 15 countries.
- To date there has been no evidence of sustained human-to-human transmission.
- No human cases of influenza A(H9N2) were reported during the period September 2010 to January 2011.
- Since September 2010, a total of 8 zoonotic infections caused by swine A(H1N1) and swine A(H3N2) viruses were detected in China (1), Switzerland (1) and the United States of America (6).

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S Avian-to-human transmission of influenzaviruses

Year	Location	Subtype	Humans	Manifestation
1995	U.K.	H7N7	3 / 0	Conjunctivitis
1997	HongKong	H5N1	18 / 6	ILI @, pneumonia
1999	HongKong / China	H9N2	2 / 0	Influenza-like illness
2003	HongKong	H5N1	2 / 1*	ILI, pneumonia
			* imported	
2003	Holland	H7N7	89 / 1	Conjunctivitis, ILI, pneumonia
2003	multi-country – 2009 (ongoing)	H5N1	411 / 256 §	ILI, pneumonia
			§ as of 11/3/09	
2004	Canada	H7N3	2 / 0	ILI, pneumonia
2006	U.K.	H7N3	1 / 0	Conjunctivitis

@ ILI = influenza-like illness

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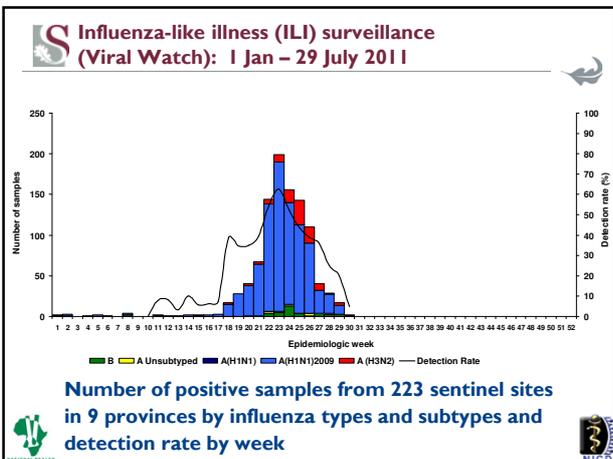
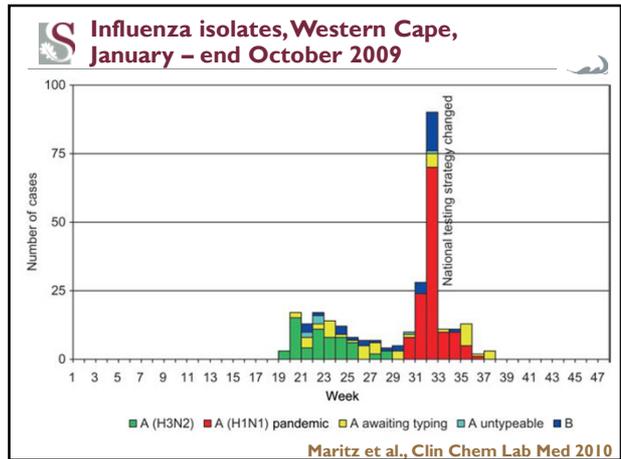
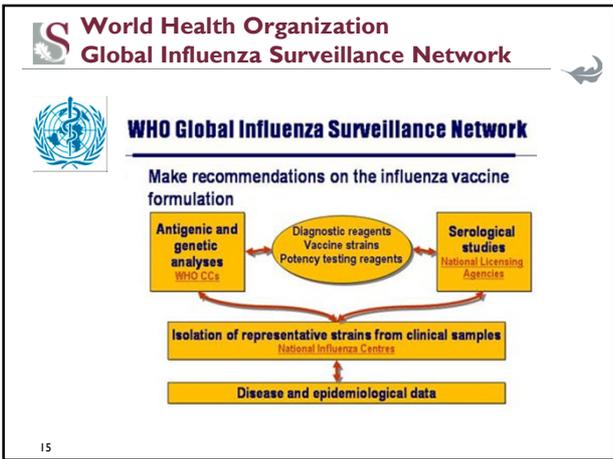
S Rapid viral culture

Shell vial cell culture
 Stain at 24 and 48 hours with monoclonal antibodies
 'Respiratory panel': influenza A and B, parainfluenza 1 - 3, RSV, adeno, ...

Influenza A

Influenza B

14 Marek Smieja, McMaster University, Canada



S Influenza-like illness (ILI) surveillance (Viral Watch): 1 Jan – 29 July 2011

Prov.	B	A unsubt.	A (H1N1)	A (H1N1) 2009	A (H3N2)	Total samples
EC	3	0	0	46	34	166
FS	1	0	0	6	4	54
GP	25	0	0	489	20	1367
KZN	1	7	0	27	25	120
LM	6	0	0	129	2	358
MP	0	0	0	34	0	82
NC	3	0	0	52	3	147
NW	2	0	0	9	1	27
WC	4	2	0	70	13	333
Total:	45	9	0	862	102	2654

Cumulative number of influenza types and subtypes and total number of samples collected by province

WHO recommendations for seasonal influenza vaccines: 2010 – 2012

The following strains are recommended by WHO

- for the 2010/11 season (northern hemisphere):
 - A/California/7/2009 (H1N1)-like virus;
 - A/Perth/16/2009 (H3N2)-like virus;
 - B/Brisbane/60/2008-like virus.
- for the 2011 season (southern hemisphere):
 - A/California/7/2009 (H1N1)-like virus;
 - A/Perth/16/2009 (H3N2)-like virus;
 - B/Brisbane/60/2008-like virus.
- for the 2011/12 season (northern hemisphere):
 - A/California/7/2009 (H1N1)-like virus;
 - A/Perth/16/2009 (H3N2)-like virus;
 - B/Brisbane/60/2008-like virus.



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CLINICAL INFORMATION - EASTERN CAPE AVIAN INFLUENZA INVESTIGATION

PATIENT DETAILS		SYMPTOM HISTORY		YES	NO
SURNAME:		FEVER			<input checked="" type="checkbox"/>
FIRST NAME:		COUGH	sd cough		<input checked="" type="checkbox"/>
AGE/DOB:	52	SORE THROAT			<input checked="" type="checkbox"/>
GENDER:	07	SHORTNESS OF BREATH			<input checked="" type="checkbox"/>
DID YOU RECEIVE INFLUENZA VACCINE? IF YES, WHEN?	10/1/2009	PAIN IN EYES			<input checked="" type="checkbox"/>
JOB/TYPE OF CONTACT:	Coworker - v. close contact	ITCHY EYES			<input checked="" type="checkbox"/>
WHEN DID THIS OCCUR?		DISCHARGE FROM EYES			<input checked="" type="checkbox"/>
DID YOU SEE A DOCTOR - WHAT WAS THE DIAGNOSIS?	Nothing to report	IF YES TO ANY OF THE ABOVE			<input checked="" type="checkbox"/>
OTHER	was made, positive but not necessary				



Slide courtesy of Dr. Lucille Blumberg, NICD

Results (N=130)

- High risk exposures in 64% of persons
- A history of conjunctivitis and/or cough in 56.4% of persons but..... both common due to dust/smoking
- No evidence of severe clinical disease

Slide courtesy of Dr. Lucille Blumberg, NICD

Results

- 3 positive specimens on serology
 - 1 seroconversion
 - 2 farm workers from the same farm with a "positive" titre (≥ 80)
 - 1:80 and 1:640 respectively
- No acute clinical specimens available for direct detection of virus

Slide courtesy of Dr. Lucille Blumberg, NICD

Conclusions

- Limited infection in humans despite high-risk exposure without appropriate personal protection
- No severe illness

Slide courtesy of Dr. Lucille Blumberg, NICD

Close working relationship between human and animal health groups established



Province of the Eastern Cape
Department of Agriculture
State Veterinary Services
Joint Operations Centre
(Eastern Influenza)

Slide courtesy of Dr. Lucille Blumberg, NICD

S Prevention recommendations for persons at risk for HPAI H5N2 infection

Despite low risk of transmission to humans and mild disease (conjunctivitis, mild respiratory illness), preventative measures recommended for all persons who have had contact or are expected to have any contact with:

- Ostriches (or other poultry) with suspected or proven HPAI (H5N2)
- An environment or environmental samples suspected / proven to be contaminated with HPAI (H5N2) virus

This includes: farm workers, abattoir workers, animal health personnel and any field workers in contact with poultry from farms with suspected/proven HPAI.

NICD; updated 15 April 2011

S Prevention recommendations for persons at risk for HPAI H5N2 infection

1. Vaccination with seasonal influenza vaccine. (No protection against infection with HPAI H5N2!)
2. Protective clothing for significant direct contact with or exposure to aerosols of: respiratory secretions, blood/body fluids, faeces.

High risk exposures: stunning and bleeding (throat-slitting), plucking, sawing through breast-bone, removal of internal organs, deboning of carcasses.

- Overall plus impermeable apron,
- Face mask (N95 particulate respirator mask preferable, if unavailable: standard well-fitted surgical masks)
- Goggles
- Disposable examination gloves
- Boots
- Hand disinfection after all contact.

Consult re. disposal of equipment and environmental decontamination.

NICD; updated 15 April 2011

S Prevention recommendations for persons at risk for HPAI H5N2 infection

3. General measures:

- good respiratory etiquette and hand hygiene:
 - cover nose and mouth when coughing or sneezing
 - wash hands after any contact with respiratory secretions
- self-monitor for respiratory symptoms (especially cough) and conjunctivitis
- keep diary of exposures
- If fever, respiratory symptoms or conjunctivitis develop, notify doctor or occupational health nurse immediately that you have possibly been exposed to HPAI (H5N2). Limit contact with others.

NICD; updated 15 April 2011

S Guidelines for investigating and managing suspected HPAI H5N2 cases

Case definition: Possible Case of HPAI (H5N2)

1. Acute respiratory illness, fever (>38°C) AND cough and/or sore throat and/or shortness of breath, ± conjunctivitis

OR 2. Acute conjunctivitis (irritation, itching, conjunctival hyperaemia (redness) or oedema)

PLUS

- recent (<1 week) exposure to ostriches, abattoir or environment with or at risk of HPAI (H5N2)
- OR • work in laboratory processing samples from persons or animals suspected for HPAI (H5N2)
- OR • contact with confirmed case during the infectious period.

NICD; updated 15 April 2011



**Baie dankie, enkosi kakhulu,
thank you, vielen Dank!**