出國報告
（類別：其他）

參加世界動物衛生組織（OIE）/日本信賴基金（JTF）亞洲高病原性禽流感（HPAI）控制計畫支持之

OIE「第 4 屆強化亞洲動物衛生資訊連結區域會議」報告

The 4th OIE Regional Meeting on Strengthening Animal Health Information Networking in Asia under the OIE/JTF Project for Strengthening HPAI control in Asia

服務機關：行政院農業委員會動植物防疫檢疫局
姓名職稱：楊文淵科長
派赴國家：泰國清邁（Thailand, Chiang Mai）
報告日期：100 年 12 月 6 日
出國期間：100 年 9 月 13 日至 9 月 17 日

OIE「第 4 屆強化亞洲動物衛生資訊連結區域會議」報告

摘要

「強化亞洲動物衛生資訊連結區域會議」為 OIE/JTF 亞洲 HPAI 控制計畫內支持辦理之年度會議，目的在於加強亞洲區域動物健康資訊網絡連結、動物防疫訊息交換，以及高病原性禽流感控制策略交流，並輔導鼓勵進行獸醫立法，進而強化會員（國）及亞洲區域疫情通報與動物疾病控制。本屆（第 4 屆）會議假泰國清邁召開，為期 3 日（2011 年 9 月 14 日至 9 月 16 日），係回顧檢視及分享各會員（國）自第 3 屆會議至今，動物健康資訊連結之進展；討論如何增進區域內動物健康資訊連結，及於國家及區域層面如何強化動物疾病預防與控制措施；最後由發生 HPAI 會員（國）進行疫情處置及防疫措施經驗分享，並討論禽流感疫苗使用策略之定位、優缺點及其挑戰。

絕大部分會員（國）均持續著手相關措施或活動，逐年改善農民、獸醫師、實驗室及獸醫服務體系各階段遭遇問題，並投注大量資源強化各階段疾病辨識、檢診及確診能力建構，以農民階段比例最高，佔 76%，以期解決農民對疾病辨識及通報知識之不足、不願通報及延遲通報等問題。另 70%會員（國）藉立法強化動物疾病預防及控制，60%會員（國）修正補償措施或提高補償金額鼓勵農民通報病例，約 90%會員（國）表示未來仍將持續加強辦理，以利掌握可疑病例並即時處置，防杜疫情發生與蔓延。

針對 H5N1 亞型 HPAI 疫情控制仍以早期偵測通報、快速診斷、移動管制、撲殺廢棄處置、主動及加強監測等為主要措施，配合良好獸醫服務體系管理及法律規範兩者配合與支持，可有效處理發生案例及防堵疫情蔓延。使用疫苗雖可作為禽流感控制之另項措施，短期內有效地控制疫情，但不建議完全取代管制監測清除策略，並應建立退場機制，於達到策略目標後停止使用疫苗，回歸監測及應變處置模式。另使用之疫苗應選用符合 OIE 標準及對發生國內病毒有效者，配合免疫後田間監測措施，早期偵測可能之病毒變異株進行分析，確保疫苗保護效力及公共衛生安全。

目次

一、緣起及目的

OIE/JTF 計畫係針對亞洲區域高病原性禽流感（HPAI）控制所成立之計畫，由日本信託基金（Japan trust fund；JTF）提供經費支持，自 2008 年 4 月開始實施至 2013 年 3 月底止。該計畫具 3 項目的，一為強化及改善區域內會員（國）間動物健康資訊連結;二為增進與強化區域內會員(國)獸醫服務體系(Veterinary service)，建構並提升診斷能量（Diagnostic capacity），以及輔導相關立法（Legislation)，用以強化執行力；三為支持禽流感流行病學研究，透過採樣監測計畫鑑定分析禽流感可能傳播路徑，發展有效防範策略。

該計畫執行單位為 OIE 亞太區域代表處（OIE Regional Representation for Asia and the Pacific，簡稱 OIE Asia-Pacific)，自 2008 年 11 月 13 日至 14 日假日本東京辦理第 1 屆「強化亞洲區域動物衛生資訊連結會議（OIE regional meeting on strengthening animal health information networking)」並與日本農林水產省（Ministry of Agriculture, Forestry and Fisheries；MAFF）合辦「亞洲家禽流行性感冒控制座談會（OIE/MAFF-Japan symposium on avian influenza control in Asia)」，目的在於加強亞洲區域動物健康資訊網絡連結與 HPAI 控制策略交流，並輔導鼓勵加強獸醫立法，進而強化會員（國）及亞洲區域疫情通報與動物疾病控制。

本次為第 4 屆會議，假泰國清邁召開，並與泰國農業部畜產局（Department of Livestock and Development；DLD）共同辦理，為期 3 日（2011 年 9 月 14 日至 9 月 16 日)，邀請 23 國參與，除印度與巴基斯坦未克參加外，計有 21 國與會，包括孟加拉、不丹、汶萊、柬埔寨、中國大陸、台灣、香港、印尼、日本、南韓、寮國、馬來西亞、馬爾地夫、蒙古、緬甸、尼泊爾、菲律賓、新加坡、斯里蘭卡、泰國及越南。另有聯合國糧農組織(Food and Agriculture Organization of the United Nation, FAO）及 OIE 等國際組織代表一同參與議題討論及經驗分享。本屆會議主要目的係：

（一）回顧檢視及分享各會員（國）自第 3 屆會議至今，動物健康資訊連結之進展與經驗。

（二）討論如何增進區域內動物健康資訊連結，以及於國家及區域層面(National

（三）由發生 HPAI 會員（國）進行疫情處置及防疫措施經驗分享，並討論禽流感疫苗使用策略之定位、優缺點及其挑戰。

二、行程及會議議程

■ 2011 年 9 月 13 日（星期二）:

自桃園國際機場前往曼谷蘇汪納蓬國際機場轉清邁國際機場，於下午 2 時 30 分至清邁 CENTARA Duangtawan Hotel Chiang Mai 辦理並完成報到手續。

■ 2011 年 9 月 14 日（星期三）:

時間	行程或議程	致詞人/報告人
08:00-08:30	報到	
08:30-08:50	開幕式	
	1. OIE 亞太區域代表處（OIE Asia-Pacific）主席致詞	1.Dr. Itsuo Shimohira
	2. Regional Bureau of Animal Health and Sanitary 致詞	2.Dr. Pairoj Hengsangchai
	3.主辦國（泰國農業部畜產局；DLD）致詞	3.Dr. Nirundorn Aungtragoolsuk
	4.各會員（國）自我介紹	
08:50-09:00	團體照	
09:00 -09:30	茶敘時間	
	第一部分：專題報告	
09:30-10:00	OIE 亞太區域代表處相關活動最新資訊	OIE 亞太區域代表處主席 Dr. Itsuo Shimohira
10:00-10:20	OIE SRR-SEA 相關活動最新資訊	OIE 計畫協調主持人 Dr. Andrew Davis
10:20-10:40	FAO RAP 相關活動最新資訊	Dr. Pawin Padungtod
10:40-11:00	Q&A	
	第二部分： ***OIE 亞太區域代表處及***	

	會員（國）進展報告	
11:00-11:30	亞洲各會員（國）於前次等會議討論概要及過去一年進展報告	OIE 亞太區域代表處副主席 Dr. Kenji Sakurai
11:30-12:00	亞洲各會員（國）2010 年第 3 屆會議後強化動物疫情通報進展報告	3 個會員（國）
12:00-13:00	午餐	
13:00-15:00	會員（國）報告	12 個會員（國）
15:00-15:30	茶敘時間	
15:30-16:50	會員（國）報告	10 個會員（國）
16:50-17:30	第 1 日結論	
18:30-20:30	接待晚宴	

■ 2011 年 9 月 15 日（星期四）：

時間	議程	備註
	第三部分：專題報告	
	H5N1 亞洲疫情及疫苗使用	
08:30-09:00	OIE 亞太區域代表處專題報告： 亞洲高病原性 H5N1 禽流感疫情狀態及疫苗使用情形	OIE 亞太區域代表處 副主席 Dr. Kenji Sakurai
09:00-09:30	FAO 專題報告： 使用禽流感疫苗控制 HPAI：機會及挑戰	FAO 越南分部 ECTAD Dr. Santanu Bandyopadhyay
09:30-09:40	Q&A 及討論	
09:40-10:00	茶敘時間	
10:00-11:20	使用禽流感疫苗會員（國）報告	中國大陸、香港、印尼、越南
11:20-12:00	不使用禽流感疫苗會員（國）報告	孟加拉、印度
12:00-13:00	午餐	
13:00-15:00	不使用禽流感疫苗會員（國）報告	南韓、日本、泰國、不丹、柬埔寨、尼伯爾、
15:00-15:30	茶敘時間	
15:30-16:10	不使用禽流感疫苗會員（國）報告	緬甸、蒙古
16:10-17:00	第 2 日結論	

■ 2011 年 9 月 16 日（星期五）：

時間	議程	備註
	第四部分：專題報告	
	OIE/JTF 禽流感監測計畫及	
	清邁大學獸醫學系介紹	
08:30-09:00	OIE/JTF 禽流感監測計畫進展： 2008-2010 年 OIE/JTF 禽流感監測計畫於亞洲進行野鳥及家禽禽流感監測結果概論	OIE 亞太區域代表處 副主席 Dr. Kenji Sakurai
09:00-09:30	清邁大學獸醫學系介紹	清邁大學 Dr. Tongkorn Meeyam
09:30-09:45	討論	
09:45-10:00	茶敘時間	
10:00-11:15	總結討論（結論與建議）	
11:15-11:30	閉幕式	OIE 亞太區域代表處 主席 Dr. Itsuo Shimohira 各與會代表
11:30-12:15	午餐	
12:30-17:00	實地參訪清邁大學獸醫學系	

■ 2011 年 9 月 17 日（星期六）：自清邁國際機場搭機返台。

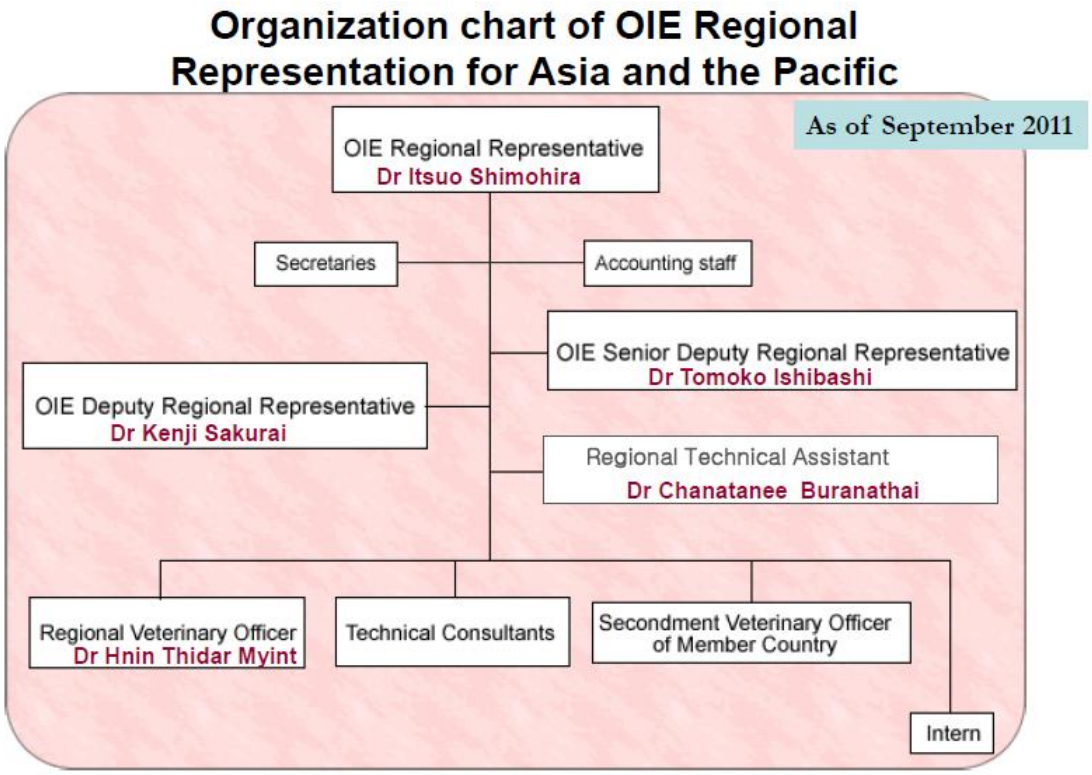
三、過程及會議內容

（一）第一部份：專題報告

1. OIE亞太區域代表處相關活動最新資訊

（OIE 亞太區域代表處主席 Dr. Itsuo Shimohira 主講）

OIE 亞太區域代表處於 2010 至 2011 年期間部分成員出現異動，計有 2 位成員離開，1 位歸建日本 MAFF，另增加兩位新成員（一位來自泰國，一位來自緬甸），組織架構如下：



2011 年 4 月 OIE 亞太區域代表處辦公地點由原址搬遷至東京大學食物科學大樓（Food Science Building 5F, The University of Tokyo 1-1-1 Yayoi Bunkyo-ku, Tokyo 113-8657, Japan），與 OIE 食物安全合作中心同一大樓，以利 OIE 獸醫服務及食品安全業務合作與推動。

OIE 亞太區域代表處重點工作在於促進區域內會員（國）獸醫服務能力之建置（包括立法、診斷及監測等）及其強化，使其符合國際動物健康標準，以及透過區域結盟、會議、研討會及專家參訪等方式，改善區域內

動物健康狀態。於近兩年（2010-2011 年）間辦理主要活動如下：

（1） 辦理區域內各業務聯繫窗口（Focal point）專題研討會（Workshop），使各會員（國）代表了解窗口管理功能與責任，並藉由會議討論方式，增進對 OIE 法典與手冊規範程序之了解，以強化會員（國）動物衛能力建構（Capacity building for Animal health）。

- 2010 月 10 月 5-7 日於泰國曼谷召開 OIE 野生動物業務聯繫窗口區域研討會（Regional Workshop for the Focal point of Wildlife）。
- 2010 月 10 月 12-14 日於新加坡召開 OIE 動物生產及食品安全業務聯繫窗口區域研討會（OIE Regional Workshop for the Focal point of Animal Production and Food Safety）。
- 2010 月 4 月 12-14 日於中國大陸北京召開 OIE 疾病通報業務聯繫窗口區域研討會（OIE Regional Workshop for the Focal Point of Disease Notification）。

（2） **HPAI 控制及預防：**由於 2003 年起 HPAI 於亞洲地區的持續發生，帶來該區域無形之經濟衝擊與動物人類健康風險，OIE 與日本信託基金挹注經費成立下列計畫，進行亞洲區域 HPAI 控制：

- OIE/日本信託基金東南亞 HPAI 控制計畫（OIE/J(S)TF Project for HPAI control in Southeast Asia）：於 2006-2007 年執行， 屬第一期（Phase I）。
- OIE/日本信託基金強化亞洲 HPAI 控制計畫（OIE/J(S)TF Project for strengthening HPAI control in Asia），用以調查亞洲地區 HPAI 流行病學狀態有無改變：

A. 2 年計畫：於 2008-2009 年執行， 為第 2 期（Phase II）計畫。

(a) 用來協助 HPAI 實驗室診斷及監測的能力建構。

① 辦理國家級 HPAI Real-Time PCR（RT-PCR）診斷實作訓練。

② 辦理區域內國家檢驗實驗室成員 HPAI 基因序列分析技巧訓練課程。

(b) 購置實驗室儀器及材料，支持印度、斯里蘭卡、巴基斯坦、尼泊爾、不丹、孟加拉及蒙古 7 個會員（國）23 個診斷實驗室運作及更新。

B. 5 年計畫：執行期間為 2008-2012 年。

(a) 用以強化亞洲地區動物健康資訊連結，尤其是 HPAI 控制策略。

① 亞洲 HPAI 控制專家會議：自 2008 年起，每年定期辦理，計已辦理 4 次，討論分析及分享各會員（國）HPAI 案例資訊、基因序列及野鳥於爆發案中所可能扮演的角色。第四次會議建議 OIE 亞太區域代表處應與其他伙伴組織如 FAO 與 Wetlands International 等協同合作，以更有效地執行 OIE 禽流感監測計畫，另應鼓勵亞洲會員（國）與北海道大學合作禽流感研究，以及提供該國樣材或分離株至北海道大學協助案例診斷，於 OIE 禽流感監測計畫下，將該大學作為亞洲 HPAI 與 LPAI 診斷研究中心。

② 動物健康資訊連結會議：為此次參加之會議，亦自 2008 年起每年定期辦理，本次為第 4 次會議。

(b) 強化獸醫服務能力及其建構，包括立法。

① 疾病控制策略及立法之區域性訓練研討會（Regional training workshop on legislation and disease control strategies）。

(c) 沿候鳥遷移路徑執行野鳥及家畜禽禽流感監測，找尋其流行病學相關性，並將相關結果傳至 OIE 參考實驗室（日本北海道大學參考實驗室）分析及建檔，強化其監測資料庫。

① 執行田間監測，並由日本北海道參考實驗室進行資料

實施方法：

➔ 採樣監測：採取野鳥、家禽（鄰近野鳥採樣區之家禽）及環境樣本。

➔ 遷移路徑調查：於蒙古抓取黃嘴天鵝（Whooper swan）與其他種野鳥放置衛星追蹤器（Satellite transmitter）進行調查。

結果：

➔ 採樣監測：

- 統計寮國、越南及蒙古監測結果，3,838 個樣本中，分離出 78 個 A 型流感病毒株，均來自越南的家禽（鴨）樣本，野鳥及環境樣本分離結果均為陰性。H5N1 病毒僅有一株，來自越南南部活禽市場的紅面番鴨（*Muscovy Duck*）樣本。

Category	No. of bird/sample	LAMP (+)	
		Virus (+)	Virus (-)
Wild bird	832	0	6
Domestic bird	2,675	78	120
Environment	331	0	2
Total	3,838	78	128

AIV isolated in South Vietnam in 2009-2011

Sampling place		Year	Subtype (number of isolates)
Farm	A	2009	H4N6 (2), H9N2 (1)
	B	2009	H4N6 (2)
	C	2009	H4N6 (2)
	D	2009	H4N6 (1), H9N2 (3)
	E	2009	H9N2 (14)
Live bird market	F	2009	H3N8 (1)
	G	2009	H9N2 (6), H11N3 (2)
	H	2009	H3N2 (1), H9N2 (1) H11N3 (1), H11N9 (1)
	I	2010	H9N6 (1)
	J	2010	H6N2 (24), H6N6 (1)
	K	2011	H6N2 (2)
	L	2011	H5N1 (1), H6N2 (5)
	M	2011	H11N5 (1), H11N9 (2) H12N5 (2)
Slaughter house	N	2009	H9N2 (1)

- H9N2（26 個分離株）與 H6N2（24 個分離株）是最常分離到的毒株。
- 此次野鳥樣本未檢出病毒部分，推測可被監測採樣的野鳥本身即是健康禽鳥，感染野鳥多已發病死亡或因體力差無法遷徙被採檢，經檢討，建議野鳥採樣應該著重採集死禽鳥及新鮮野鳥糞便樣材，以真實反應野鳥感染或帶毒情形。

➔ 遷移路徑調查：自已知路徑可觀察黃嘴天鵝與斑頭雁（Bar headed goose）從蒙古遷徙。

② HPAI 分子資料分析研討會（HPAI molecular Data analysis Workshop），計辦理 2 次，2009 年及 2011 年分別假日本北海道參考實驗室及緬甸辦理。

（3） 新興動物疾病與人畜共通傳染病準備（Preparedness for Emerging Animal Diseases & Zoonoses）：2 年間計辦理 OIE/FAO-APHCA 區域性布氏桿菌症、傳染性海綿狀腦病（TSE）、牛海綿狀腦病（BSE）風險狀態認定及藍舌病（Bluetongue）診斷及控制研討會。

（4） 口蹄疫控制：

- 辦理 OIE 重要委員會議及工作小組會，包括第 17 屆 OIE SEAFMD 小組會員會議、第五屆亞太區全球跨界境動物傳染病防治計畫（GF-TADs）指導小組會議、SEAFMD（Southeast East Asia Foot and Mouth Disease）湄公河上下區口蹄疫控制及動物移動管理工作小組會議。
- 於日本信託基金（JTF）新計畫支持下，2011 年成立為期 5 年新計畫著手東亞地區口蹄疫控制。計畫工作包括：
  - A. 發展東亞地區口蹄疫清除藍圖（Roadmap），並支持區域內病毒基因分析及所使用疫苗資訊之交換。
  - B. 區域內國家資訊網路建立、實驗室能力建構，以及於特定國家進行研究調查工作。
  - C. 該計畫相關細節活動將依據 2011 年 12 月邀集東亞六國於東京舉辦之計畫成立會議討論結果進行規劃。

（5） 全球跨界境動物傳染病防治計畫（GF-TADs）：

- 為 OIE 與 FAO 共同支持之計畫，透過整合該兩個組織的力量，含括區域性及全球性面向，以期達到全球動物疾病控制及預防之目標。
- OIE 亞太區域代表處自 2005 年即協助辦理區域性指導小組會議（Regional Steering Committee Meeting），討論計畫執行方向與策略、應強化之核心工作等，每年辦理一次，第五屆會議已於 2011 年 7 月於東京辦理完竣。

2012 年將為持續辦理上述各項研討會及活動，維持區域內動物資訊連結，掌握疾病流行病學狀態即時提供預警，以結盟或合作方式，強化疾病診斷與控制能力及會員（國）間溝通協調與運作。

2. OIE SRR-SEA相關活動最新資訊

（OIE Programme Coordinator Dr. Andrew Davis 主講）：

於東南亞，OIE 與澳大利亞援助組織（Australian Agency for International Development；AusAID）、歐盟（EU）及美國國際開發援助署（U.S. Agency for International Development ：USAID）合作，執行下列三項主要計畫，藉與東南亞國家決策者或相關主政機關代表會議研商與協調，來強化該區域動物傳染病防治、降低跨界境傳播機率，以及嘗試使參與國疫情資訊透明：

- AusAID STANDZ（Stop Trans-boundary Animal Diseases and Zoonoses in South East Asia）計畫：

  A. 辦理協調會議、東南亞區域國家指導會議及拜會國家決策者或相關主政機關，發展與推動疾病控制策略與藍圖（如東南亞狂犬病控制策略及口蹄疫防治藍圖），倡導聯合防疫，並進行東南亞區域國家 OIE PVS（獸醫服務體系運作效能）評估分析，加強其獸醫基礎結構及質量，包括立法、公眾關係、獸醫教育及實驗室四大面向，最後追蹤成效。

  B. 另辦理東南亞區域國家疫情爆發調查與分子流行病學分析、實驗室人員採樣處理組訓及實驗室交互測試與品質保證。

- 歐盟 HEPD（highly pathogenic and emerging and re-emerging diseases）計畫：

  亞洲區域性合作計畫，與OIE亞太區域代表處合作辦理野生動物、動物福利、食品安全及WHAIS通報窗口（Focal point）組訓，另支應辦理HEPD指導小組會議，抗原銀行文件起草工作及具HEPD資格國家內的PVS工作與任務。

- USAID IDENTIDY 計畫：

  為 Emerging Pandemic Threat Program（EPT）之一部分，由 USAID 所贊助，係發展實驗室網絡及強化新興疾病區域內實驗室診斷能

力，辨識動物危險病原，於其轉變為可能危害人體健康之威脅前，予以早期鑑定及反應，包括：

A. 發展國家實驗室指引及方針。

B. 促進檢診品質（如生物安全、品質確保、正確診斷、樣材收集處理及運送等，應有標準作業程序可供依循及驗證）。

C. 強化檢驗量能，以支持國家動物傳染病監測及其反應作為。

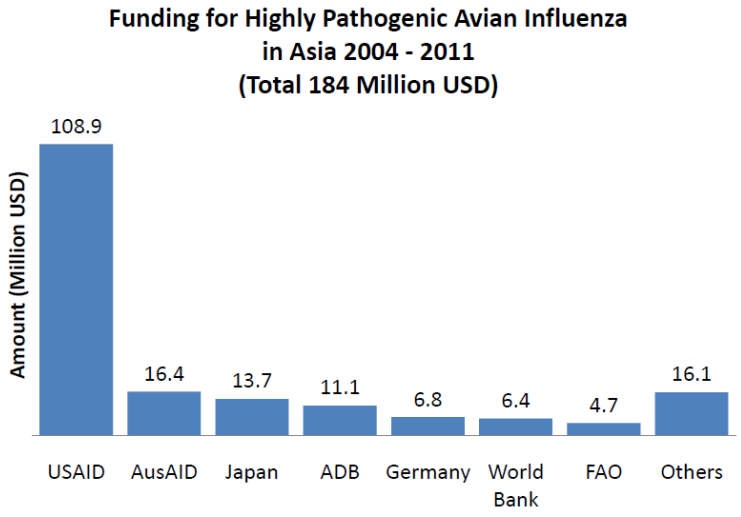
D. 提升實驗室間連結網絡，確保流程及資訊之一致性。

3. FAO RAP HPAI相關活動最新資訊

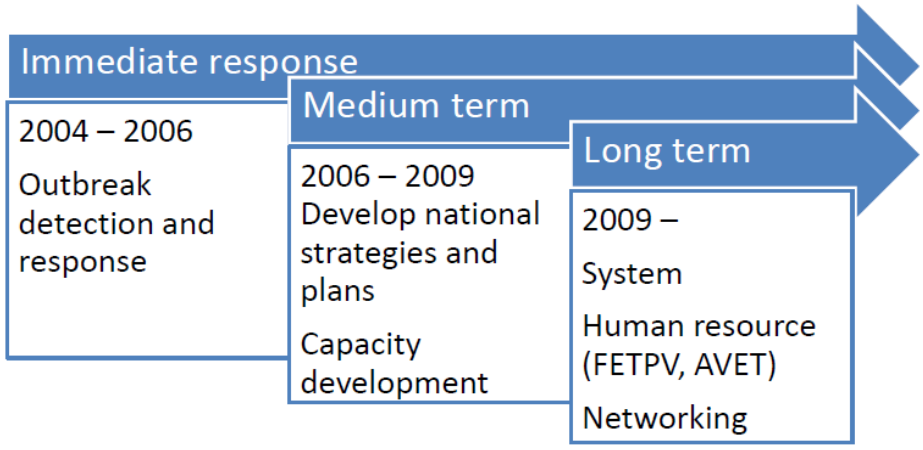
（FAO 亞太區域辦公室區域計畫主管 Dr. Pawin Padungtod 主講）

2004 年起，FAO 即開始透過全球性、區域性或國家型計畫協助 HPAI 防治及相關活動，至 2011 年共挹注 1 億 8 千 4 百萬美元資金（約 55 億 2 千萬新台幣），詳如下圖：

Levels	Number of Projects	Total Budget (Million USD)
Global	13	43
Regional	41	81
Country	109	182
Total	163	306



對於東南亞 HPAI 之防治，FAO 以三段式策略進行，分別為立即反應、中期及長期策略：



（1） 立即反應（Immediate Response）：

- 即時通報及資訊分享。
- 組織技術會議及專家指導會議。
- 提供國家、區域及全球層面跨機構（組織）之協調及合作。
- 於國家、區域及全球層面提供技術上與操作上之協助，促進國家檢診及處理反應能力。其中於國家層面協助項目包括評估該國疾病狀態、支持其 HPAI 診斷及監測、指引及訂定策略、緊急應變規劃、提供所需儀器及檢驗耗材等。

（2） 中期策略：

協助東南亞區域國家發展田間偵測疾病、實驗室確診、快速且有效疫情控制等能力，以及國家疾病控制策略、行動及應變計畫，並建立動物衛生（Animal health）及公共衛生（Public health）良好協調機制，共同運作。

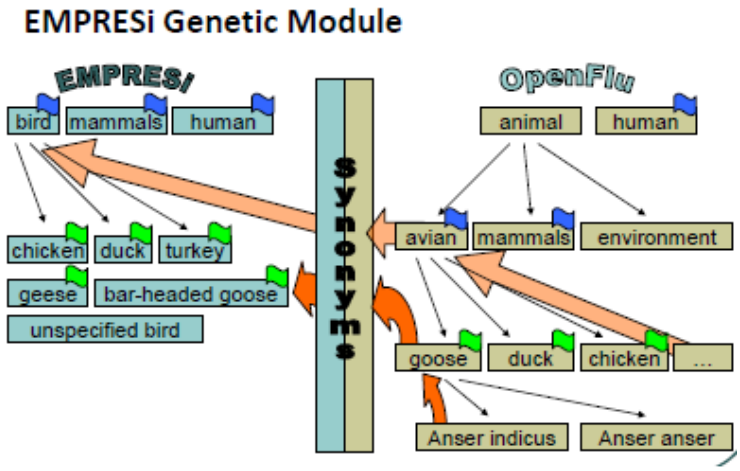
（3） 長期策略：

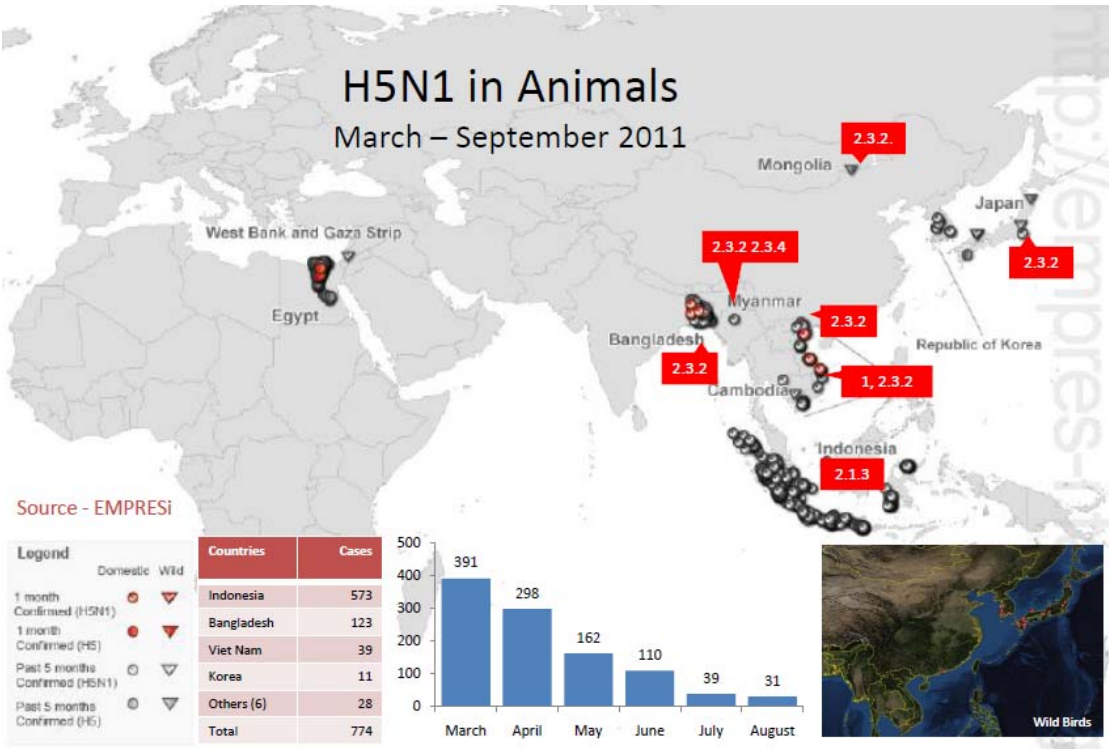
強化中央、地方至田間獸醫服務體系之運作，以及區域內疫情資訊及實驗室網絡連結，包括：增進/發展立法、強化疾病通報體系及其資訊流通、加強監測等。

另外，FAO 亦積極投入資源進行東南亞跨界境的動物貿易管理風險

分析與家禽產銷供應鏈分析，嘗試了解區域內 HPAI 可能傳播的風險路徑，並透過獸醫師田野流行病學調查訓練計畫（Field Epidemiology Training Programme for Veterinarian；FETPV），強化區域內國家田野流行病學能力之建構。

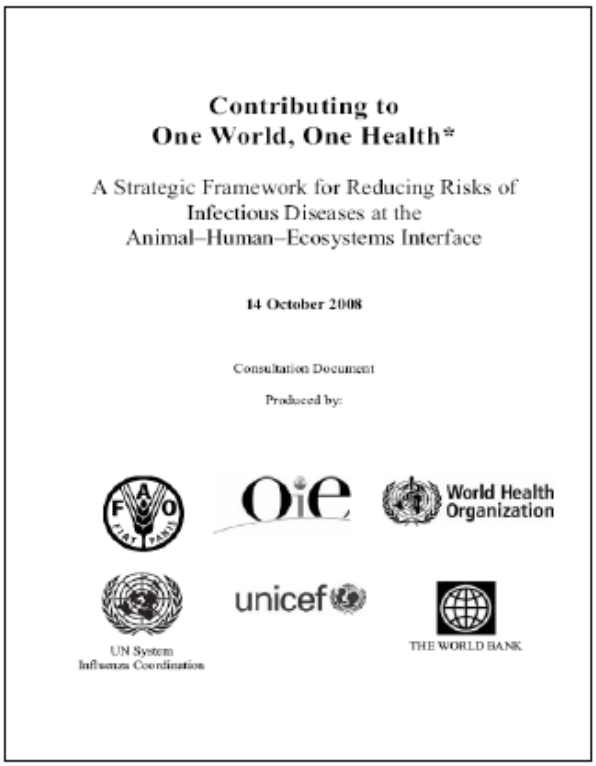
同時，FAO 為使區域內 HPAI 訊息能相關連結分享，提供預警，已建置 EMPRESi Asia 系統，供 OIE 會員國瀏覽使用，可藉該系統了解亞洲區域 HPAI 發生樣態、地理分佈、時序及進行簡易資料組合分析(例圖如下)。系統內疫情資訊每週輔以電子郵件方式（寄件者為：AI Network Asia）寄送各會員國窗口，增進訊息傳遞即時性。





依據相關研究、國家流行病學資料及案例經驗，FAO 了解 HPAI 為多因子性疾病問題（Multi-factorial problem），而野鳥於傳播上具有一定角色，且為保毒者，已將所知 HPAI 傳播及常在風險因子納入所出版 HPAI 預防及控制策略方法手冊（2010-2015 年版），供各國風險管理之參考。

另自 2008 年起，FAO 與相關國際機構與組織合作，推動**同一個世界，同一個健康（One world，one health）**概念及疾病防治工作，於動物-人類-生態介面上一同探討新興傳染病對動物及人類之健康風險，並成立計畫（如：HEPD、EPT 計畫）及執行策略鼓勵全球國家不僅做好自己，亦需幫助疾病來源或發生國家進行防治，共同努力，以降低新興傳染病成為地方性或區域性（甚至為全球性）流行病之危害與損失。


Contributing to
One World, One Health*

A Strategic Framework for Reducing Risks of Infectious Diseases at the Animal–Human–Ecosystems Interface

14 October 2008

Consultation Document

Produced by:

World Health Organization

unicef

UN System Influenza Coordination

THE WORLD BANK

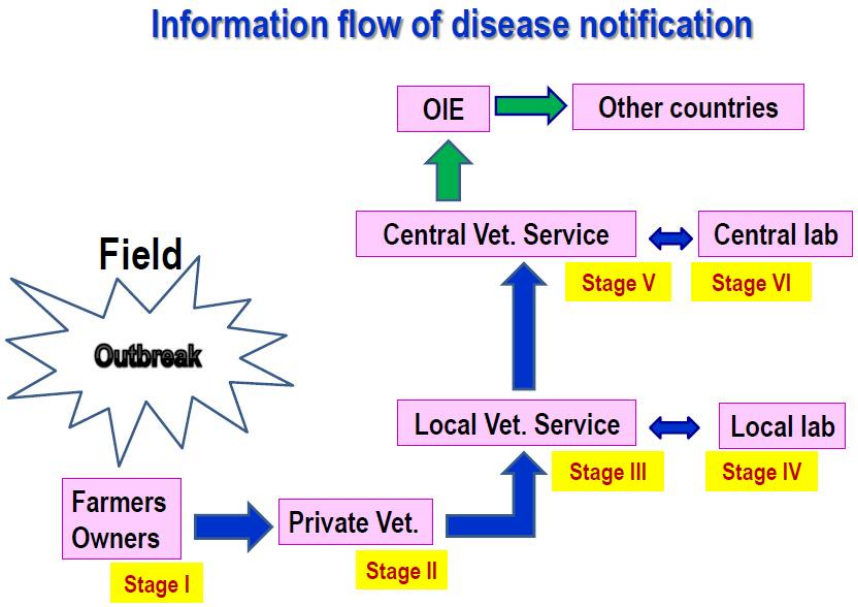
（二）第二部份：OIE亞太區域代表處及會員（國）進展報告

1. 亞洲各會員（國）於 2008-2010 年強化亞洲動物衛生資訊連結區域會議討論概要及過去一年進展報告

（OIE 亞太區域代表處副主席 Dr. Kenji Sakurai 主講）

強化亞洲動物衛生資訊連結區域會議目的在於分享亞洲地區會員（國）最新之動物健康資訊及動物疾病預防控制之經驗，透過研討增進亞洲區域動物健康資訊連結。

配合計畫經費之支持，OIE 亞太區域代表處自 2008 年開始舉辦會議，當年寄送問卷至 24 個會員（國）進行填報，優先了解區域內動物健康資訊通報及 HPAI 控制所遭遇問題及瓶頸，並發展 6 階段（農民、私人獸醫師、地方獸醫服務體系、地方實驗室、中央實驗室及中央獸醫服務體系）問題辨識、造成問題原因及解決方法，請參與會員（國）於會議中進行簡報（簡圖如下）。



（1） 結果發現半數國家疾病通報體系無法有效運作，各階段均遭遇到困難，但大部分問題出現於農民或畜主階段，原因包括：

- 缺乏疫情通報傳遞方法。
- 人力及經費資源不足。

- 現場防疫或專業人員疾病專業知識不足，無法辨識疾病進而即時通報。
- 農民或畜主害怕失去動物（財產）而不願通報。
- 沒有鼓勵或補償措施導致通報意願低等。

（2） 半數以上國家執行 HPAI 控制措施時遭遇困難，原因為：

- 禽場生物安全落實度差，難以有效防範疾病入侵。
- 農民不願合作。
- 現場農民及從業人員缺乏疾病防治意識與認知。
- 經費限制導致無法全面防治。
- 補償費用過低或撥付速度過慢等。

依統計分析結果，絕大部分會員（國）均持續地著手相關措施或活動，逐年改善各階段所遭遇之問題，其中 70%會員（國）藉立法強化動物疾病之預防及控制，60%會員（國）修正補償措施或提高補償金額鼓勵農民通報病例。

另分析過去一年進展報告，發現各會員（國）均投注大量資源與行動於 6 個階段之疾病辨識、檢診及確診能力之建構，其中以農民階段比例最高，佔 76%，其次為私人獸醫師階段，佔 71%。全部會員（國）自我評估結果顯示，過去一年疾病通報效能均有改善，其中 88%認為具有明顯改善，並以中央獸醫服務體系運作為最佳。不過，主要關鍵問題還是以農民階段為首要，包括對疾病辨識及通報的知識不足、不願通報及延遲通報等，約 90%會員（國）表示未來一年仍須持續強化農民宣導教育，提升農民主動通報意願及能力，才能即時掌握可疑病例並處置，防杜疫情發生與蔓延。

2. 亞洲各會員（國）2010 年第 3 屆會議後強化國內動物疫情通報進展報告（過去一年來於 6 階段作為及進展）

彙整與會 22 個會員（國）報告，各階段作為及進展摘要說明如下：

- 農民階段（Farmer level）：

  A. 增進農民對疾病認識：辦理宣導教育與講習班，發送摺頁及印刷品，以及透過廣播、宣傳車、簡訊、平面或電子媒體加強宣導。

  B. 修改補償辦法，提高補償比率或提供適價之補償，鼓勵農民通報並增進通報意願。

  C. 實施農民或檢舉通報獎勵措施，鼓勵通報疫情。

  D. 提供通報管道及工具：免付費電話、簡訊、傳真及電子郵件反應管道設置及暢通維護。

  E. 透過免費檢診服務，掌握田間病例（例：香港）。

  F. 派員定期訪視，加強與農民溝通及蒐集疫情資訊（例：東南亞國家）。

  G. 建立後院禽群（鬥雞）及放牧式鴨群（認場）身份護照制度，追蹤家禽健康情形（例：泰國）。

- 私人獸醫師/輔助性專業人員階段（Private Vet/Para-professional level）：

  A. 提升疾病辨識能力：辦理獸醫師教育訓練與認證、講習班及線上教學課程，另編輯發送疾病摺頁、手冊及相關印刷品供現場辨識輔助使用。

  B. 提供通報管道及工具：免付費電話、簡訊、傳真及電子郵件反應管道設置及暢通維護。

  C. 立法賦予強制通報之義務。

  D. 按件獎勵通報。

  E. 辦理溝通會議，輔導落實通報。

- 地方獸醫服務體系階段（Local veterinary service level）：

  A. 發展建置網頁通報（Web-based reporting system）或疫情通

B. 提供通報管道及工具：免付費電話、簡訊、傳真及電子郵件反應管道設置及暢通維護。

C. 確定通報窗口及聯繫方式，提供標準通報流程，並辦理教育訓練或講習班。

D. 定期舉辦聯繫會議，檢討強化通報流程。

■ 地方實驗室階段（Local lab level）：

A. 增進檢驗診斷能力或量能：

(a) 補充技術人員。

(b) 建構實驗室設施及增添設備。

(c) 辦理進階訓練課程、實作訓練及研討會，強化檢驗人員技術觀念及操作能力。

(d) 建立檢驗標準流程與方法，並予認證（如 ISO 認證）。

(e) 辦理實驗室間比對能力試驗（Inter-laboratory proficiency test），確保檢驗結果可信度。

B. 發展建置地方實驗室與政府之資訊連結，增進相互間聯繫之效率與即時性。

■ 中央獸醫服務體系階段（Central veterinary service level）：

A. 派員參加國際研討會及訓練會議，強化國際疫情通報。

B. 辦理中央與地方聯繫會議，強化溝通及通報。

■ 中央實驗室階段（Central lab level）：

A. 檢驗診斷能力維持與強化：

(a) 持續訓練實驗室操作人員，發展確診及病毒鑑定（Virus characterization）能力。

(b) 支持補充或增加相關人力及經費，進行實驗室軟硬體建置。

(c) 辦理疾病檢診國際研討會或派員參加海外訓練課程，並與國外實驗室進行交流合作。

(d) 建立檢驗標準流程與方法，並進行實驗室認證。

B. 發展建置中央、地方實驗室與政府資訊連結，增進相互間聯繫之效率與即時性。

（三）第三部份：H5N1 亞洲疫情及疫苗使用專題報告

1. 亞洲高病原性H5N1 禽流感疫情狀態及疫苗使用情形

（OIE 亞太區域代表處副主席 Dr. Kenji Sakurai 主講）

全球至今已有 63 個國家發生過 H5N1 禽流感疫情，其中以 2006 年為發生國家數高峰，計有 55 個國家發生，以歐洲國家佔多數。亞洲 H5N1 禽流感疫情狀態如下表：

H5N1 狀態	東亞	東南亞	南亞
持續發生（Persistent）	中國大陸	印尼 越南	孟加拉 印度
散發（Sporadic）		柬埔寨 緬甸	
原為清淨國家，後發生並採取清除（Free-reintroduction-eradication）	日本 南韓 香港（?）	寮國	
發生過，但已清除，現為清淨國家（Free, eradicated）		馬來西亞 泰國	不丹（?） 尼泊爾（?） 巴基斯坦
從未報告（Never reported）	台灣 蒙古*	菲律賓 新加坡 汶萊	馬爾地夫 斯里蘭卡

附註：

1. 資料來源取自 FAO EMPRES-I 系統及 OIE WHAID 系統資料。
2. ?者須該國提供進一步資訊以確認。
3. *具野鳥 H5N1 案例，家禽未有報告。

目前於亞洲發生（曾發生）國家中，僅有中國大陸、香港、印尼及越南等 4 個國家使用疫苗進行禽流感控制，其餘 10 個國家（孟加拉、印度、南韓、日本、泰國、不丹、柬埔寨、尼泊爾、緬甸、蒙古）均不使用疫苗。亞洲國家對 H5N1 禽流感所採取主要控制措施為早期偵測及通報、快速診斷、移動管制、撲殺廢棄處置、主動及加強監測等，但若無良好獸醫服務體系管理及法律規範兩者之配合與支持，發生案例時難以有效控制及防堵疫情蔓延。加上亞洲地區家禽生產系統多屬開放式（尤其是後院養殖與水禽部分），又具有因文化及社會飲食習慣需求所存在之活禽市場（Live bird

markets）及鮮活家禽買賣菜市場（Wet markets），導致亞洲地區 H5N1 禽流感流行樣態複雜，防治困難，而全球 90％家鴨隻來自亞洲地區，75%產於中國大陸及越南禽流感疫情國家，再面臨水禽不顯性感染臨床特性，使得於亞洲地區採取疫苗使用策略為另一個需要思考且審慎評估之目標。

那麼，何時應該考慮使用疫苗呢？OIE 提出三項疫苗使用策略，分別為：

（1） 預防性免疫（Preventive vaccination）：確認高風險性禽流感病毒已入侵，且快速偵測及反應措施可能不足以有效防治時，可以考慮使用疫苗進行預防性控制。

（2） 緊急免疫（Emergency vaccination）：當確認 H5N1 病毒入侵或流行病學證據顯示可能發生大規模疫情及蔓延時，可採取緊急免疫，控制防堵疫情向外擴散。

（3） 日常免疫（Routine vaccination）：當禽流感已經成為地方性流行之疾病時，可考慮將禽流感疫苗納入為生產計畫一部份，例行進行疫苗注射，提供飼養家禽保護力。

使用疫苗防治或預防 H5N1 之目的在於提供目標族群保護免疫力，降低臨床症狀、生產損失與排毒量，以及減短排毒期間，甚至減輕對人類健康之威脅。長期目標係提供緩衝時間，透過風險溝通及協調，改變飲食及文化因子，處理生產系統或家禽市場問題，另直接降低田間盛行率至某一程度，搭配有效之主動監測及管制清除措施，有效清除發生國禽流感問題。

不過，未適當地使用疫苗有可能造成疾病控制複雜化，甚至促進病毒擴散，因此決定使用 H5N1 禽流感疫苗前，應考慮下列情境，綜合評估：

（1） 無症狀感染或無症狀病毒擴散（Silent infection or silent virus spread）：經禽流感疫苗免疫之禽鳥促使臨床偵測變得困難，且依舊可被野外毒感染，於某些特殊條件下，會於該免疫族群中擴散；而單獨使用疫苗無法清除病毒及其感染。

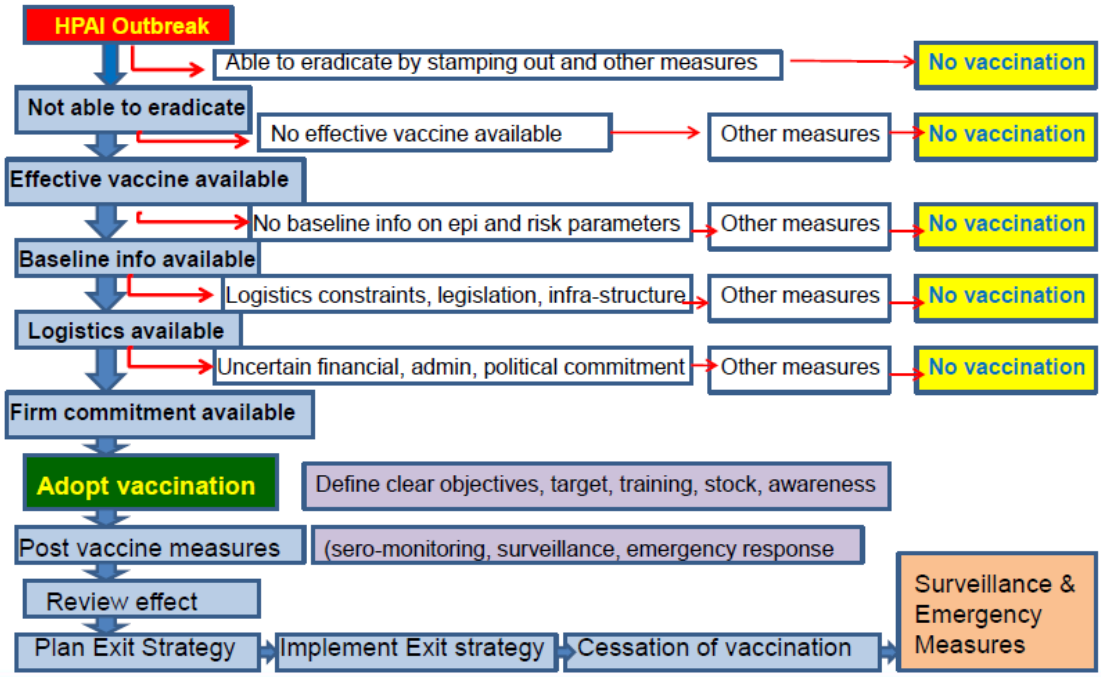
（2） 抗原性改變或微變（Antigenic change/drifting）：禽流感病毒於免

綜上所述，使用疫苗確可作為禽流感控制之另項措施，但不建議以該措施完全取代管制監測清除策略，應予相互搭配執行，而使用之疫苗應選用符合 OIE 標準及對發生國內病毒有效者，配合免疫後田間監測措施，早期偵測可能之病毒變異株進行分析，確保疫苗保護效力及公共衛生安全。

2. 使用禽流感疫苗控制高病原性禽流感：機會及挑戰

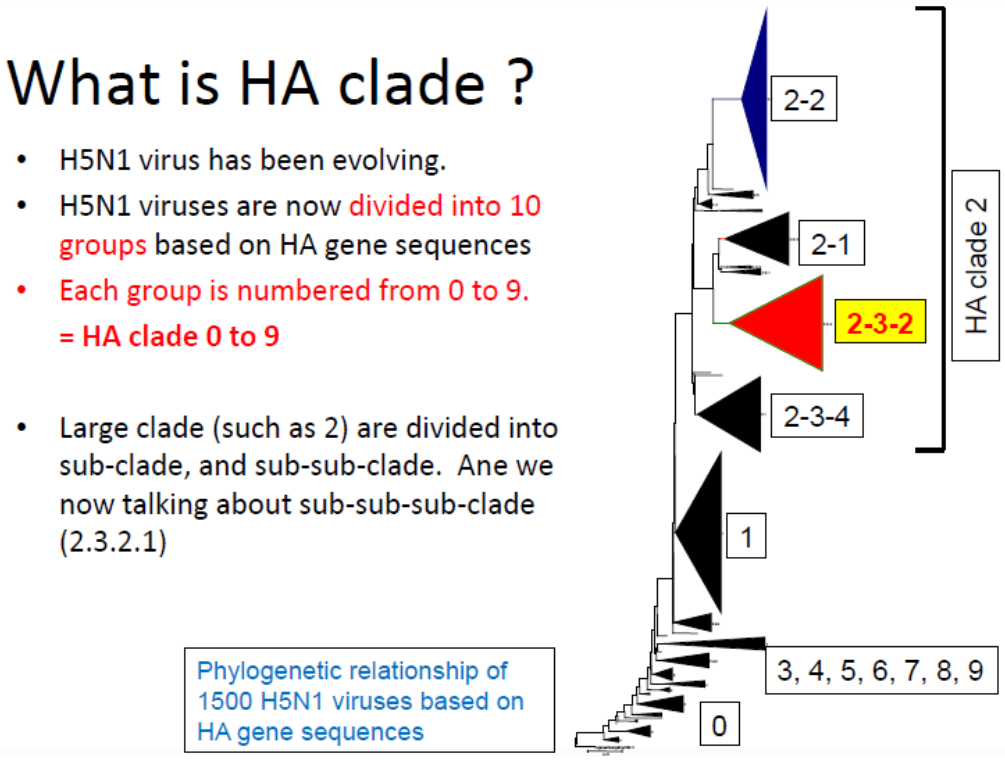
（FAO 越南 ECTAD Dr. Santanu Bandyopadhyay 主講）

一個發生國若開始考慮使用疫苗控制禽流感問題，需要很多主客觀條件相互配合，才能達到預期效益，經 FAO 彙整分析，提供下方疫苗使用決定樹供各發生國政策擬定或決策之參考：



可知當發生國內疫情無法被控制及清除時，配合合乎 OIE 標準且有效疫苗之取得、對發生毒株流行病學及風險因子已有基礎了解、適法與後

勤上經費人力之支援，以及利害關係人及產業支持，於訂定明確策略目標、使用對象族群、人員訓練與宣導教育方針，以及免疫後監測及應變處置措施後，開始使用疫苗，並建議應有退場機制（Exit strategy），於達到策略目標後停止使用疫苗，回歸監測及應變處置模式。原因是，至今仍無一個國家使用疫苗（無論短期或長期）即可清除禽流感之成功案例，但確實可以減少動物案例數與損失，降低公共衛生風險，惟透過長期循環，確實增加變異株出現機會，引致疫苗保護效果降低。



H5N1 病毒依其 HA 基因序列分為 10 個分支，分別為 HA clade 0 至 clade 9，其中以 clade 2 是最大的分支，其下可以再細分為次分支（Sub-clade）、次次分支（Sub-sub-clade）到現在的次次次分支（Sub-sub-sub-clade）如 2.3.2.1。依據 HA 基因序列，H5N1 具有 1,500 個關連性分支，亦即 1,500 株不同的 H5N1 病毒株。

FAO 以越南為例，分析說明該國使用疫苗的 5W（Why、When、Who、Where 與 Which）、優點及挑戰：

（1） 使用禽流感疫苗的原因（Why）：

- 減低家禽生產損失與確保家禽產品供應。

- 降低人類暴露於病毒之機率與風險（尤其是流行風險）。
- 良好免疫家禽對感染具有高抵抗性，且經感染所排放病毒量一般較未免疫家禽減少許多。
- 免疫後可降低感受性，透過減少感受性族群，降低野外病毒循量數量。
- 短期無症狀感染或無症狀病毒擴散可能發生，但同一現象原先即可能發生於鴨隻，而越南鴨隻飼養量相當多，比較上關切性低。
- 良好管理之疫苗免疫計畫對禽流感控制證實具有效果。

（2） 使用疫苗時機（When）：因具有許多無法控制之因子，如放牧式養殖鴨群、家禽市場供銷制度及低或無生物安全之生產系統、鑑定追蹤病例能力有限等等，一旦人類病例或家禽病例數出現高發生率，則選擇使用疫苗控制（穩定）疫情。

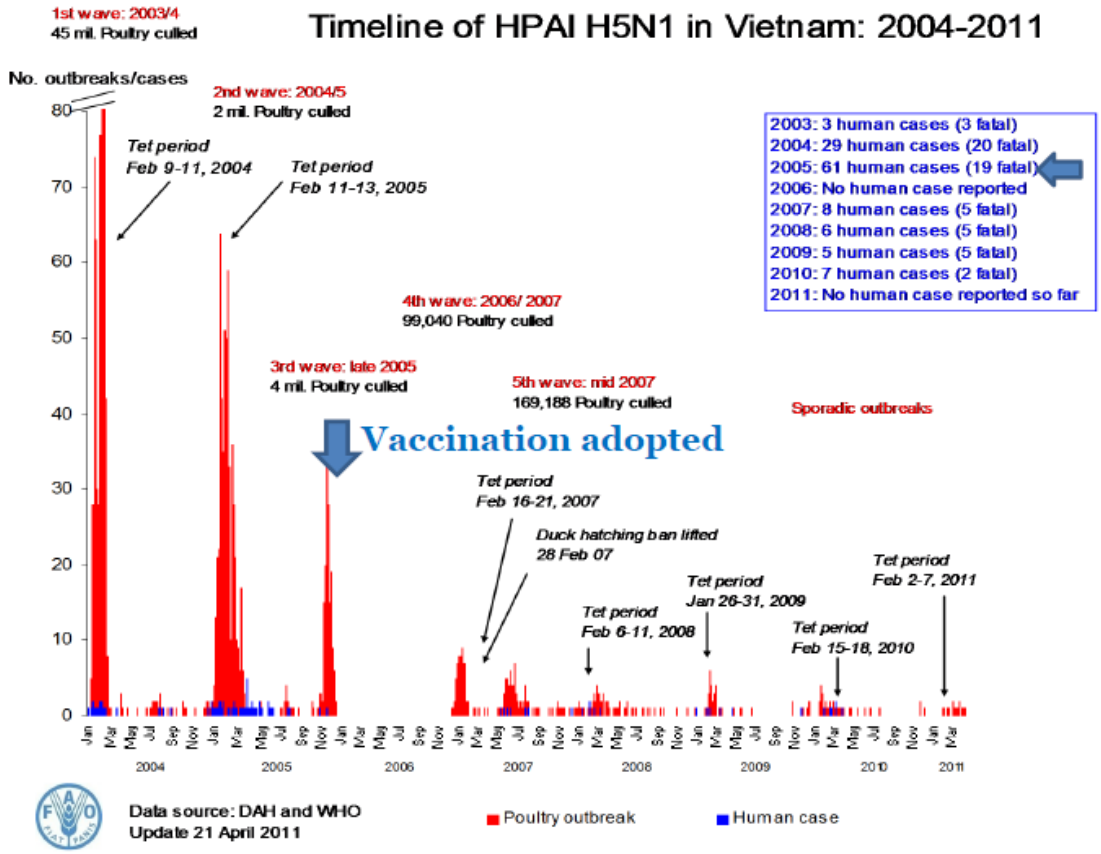
（3） 對象動物（Who）：依照疫情現況及風險評估結果，決定應使用疫苗的對象族群。

（4） 使用疫苗區域（Where）：依市場供應鏈、動物運輸及交易情形等評估風險，列出風險地圖，決定優先使用疫苗之區域，如：邊境區免疫、環帶免疫、目標區域免疫或全面免疫。

（5） 使用疫苗種類（Which vaccine）：選用通過試驗及認證之疫苗，最好作法應配合田間病毒監測結果，隨時調整種毒株。不活化疫苗之佐劑適用於雞隻與火雞，但對於水禽似乎效果不佳，亦需要適當佐劑進行疫苗優化。

（6） 使用疫苗優點：

- 有效減低呼吸道及胃腸道病毒複製數量，減少傳播機會及環境污染。
- 防止病毒感染至血液及肉，提高食品安全及維護農民生計。
- 減低人類感染機率。



附註：2005 年越南使用疫苗控制禽流感後，家禽及人類感染病例均大幅下降。

（7） 使用疫苗遭遇之挑戰：

- 不活化死毒疫苗：需要注射 2 劑維持疫苗保護效力，且需注意免疫執行之年齡，避免母源抗體干擾，另外常有疫苗低溫冷藏保存問題需要克服。
- 短飼養期肉雞或肉鴨部分，因快速上市，配合意願低。
- 太多放牧式鴨群，未圈飼，保定施打不易且無法落實群體免疫。
- 田間使用保護效果低於實驗室結果。蛋種雞具有最佳保護效力，但於產蛋高峰即下降；而肉雞部分常常很難獲得好抗體力價。
- 無法於田間產生消除性免疫（Sterilizing immunity），即病毒完全被清除後，宿主仍能保持持久免疫力，免受重復感染之效果。
- 降低生產損失及案例數後，產業及政府容易因自我滿足，一直鼓勵使用疫苗。
- 無症狀感染或無症狀病毒擴散情形可能發生。

- 疫苗使用所需經費、人力、冷藏保存設施（備）之支持。
- 出口貿易遭輸入國禁止（Trade embargo）。

3. 使用禽流感疫苗會員（國）報告

經分析本次與會會員（國）提供之報告，使用疫苗配合禽流感控制措施之優缺點或挑戰如下表：

優點	缺點/挑戰
◆ 有效減低爆發（病例）數 ◆ 減輕傳播至人類風險	◆ 可能會加快病原性微變或突變 ◆ 增加臨床辨識難度，遺漏感染案例 ◆ 時常更換疫苗以有效應付田間毒株 ◆ 持續性排毒問題 ◆ 免疫費用高 ◆ 高額經費進行免疫後監控調查

（1） 中國大陸：

2004 年開始於高風險區域開始強制使用禽流感疫苗，2005 年完成全國疫苗強制注射，由國家免費提供使用，2010 年總計使用 13.65 億劑量。後院禽群於春秋兩季各施打一劑疫苗，而當一禽群 70%低於保護力價時，該禽群將進行強制補強注射。於該國核准生產與使用之疫苗如下，具有單價禽流感疫苗及禽流感-新城病雙價疫苗：

Vaccines	Targeted uses	Remarks
H5N2 inactivated vaccine	Chicken, H5	First successful vaccine against HPAI
H5N1 inactivated recombinant vaccine （H5N1，Re-1）	chicken, duck and goose ,H5	Can be used for water fowl
H5 fowlpox virus vector-based vaccine （H5）	H5	Difference between infection by immunization and wild virus can be identified
AI-New Castle Disease bivalent recombinant vaccine（rL-H5）	H5 and Newcastle disease	First safe and effective live vaccine of negative link RNA in the world
H5N1 inactivated recombinant vaccine (H5N1，Re-1+ Re-4）	H5 and Newcastle disease	Precaution against AI caused by current H5 virus

中國大陸使用疫苗後明顯降低 HPAI 發生數，2009 年 5 月至今未再有爆發病例，因此會持續使用疫苗進行禽流感預防及控制，並透過田間病毒監測，持續開發新疫苗予以應用。

（2） 香港：

該國發生檢出之 H5N1 病毒均為 Clade 2.3.4，2003 年 6 月開始對全國 30 家雞場使用商品化不活化 H5N2 油質乳劑疫苗（A/CK/Mexico/232/94）採取全面疫苗注射，疫苗費用由農民負擔。肉雞應於 8-10 日齡及 38-40 日齡分別施打一劑疫苗，肉種雞於 12 週齡、18 週齡及往後每 6 個月均需補強注射一劑疫苗，以維持抗體保護力。

免疫後監控計畫：

透過產業組織自發性進行禽場訪視，觀察有無疑似病例或不良反應，並於第 2 劑免疫後 4 週採血進行抗體監測（HI test），若該免疫受檢禽群大於 16 倍比例低於 70%，即須再補強注射 1 劑疫苗。此外，每批雞隻需搭配飼養 60 隻哨兵雞進行監測，飼養期間有任何生病死亡，均須通報及接受調查，若一切正常，第 2 劑免疫後 4 週需分別採集 14 隻免疫雞隻與 14 隻哨兵雞血液進行抗體監測，出雞前 5 日再採集 14 隻哨兵雞血液進行抗體監測。

2003 年使用疫苗後，除於 2008 年一雞場發現病例（感染對象主要為哨兵雞），均未有禽流感案例發生。案例發生採取之控制處置措施為管制撲殺、清潔消毒及加強監測，以有效清除病原。

（3） 印尼：

2003 年開始發生禽流感大量死亡疫情，2004 年達高峰，2008 年死亡數由 2007 年 100 萬隻驟降為 9 萬隻。不採取全面性疫苗免疫策略，維持部分區域為非疫區狀態，而針對高風險區域或高風險商業禽群進行疫苗免疫，並設有退場機制，希望 2020 年可以逐漸降低案例數並清除病毒。

另由於病毒發生抗原微變（Antigenic drift），導致使用之疫苗無法保護部分田間毒株，目前正以 2010 年分離株作為種毒株進行新疫苗開發，以期提高田間抗病保護效果。

（4） 越南：

北部 H5N1 病毒基因型為 Clade 2.3.2，南部為 Clade 1。禽流感控制策略為移動管制、撲殺感染禽群（Flock）、消毒及疫苗使用。

禽流感疫苗之使用係依國家 HPAI 疫苗免疫計畫（National HPAI Vaccination Program）執行，由政府補助購置中國大陸產製疫苗（Re-1 與 Re-5）供高風險區域強制施打。高風險區域計有 25 個省分，施打對象為雞與鴨隻，每年施打 2 次，結果有效降低人類病例，近年內已無重大疫情發生。

於越南使用疫苗已證實可有效控制禽流感疫情，未來疫苗將由農民付費使用，越南政府亦將進行緊急疫苗儲備，並加速疫苗研發與生產，以應該國所需並減低國家財政負擔。

4. 不使用禽流感疫苗會員（國）報告

報告會員（國）依該國疫情狀態及評估結果，均認為透過早期偵測通報、快速診斷、移動管制、撲殺廢棄處置、主動及加強監測等主要措施，可有效處理發生案例及防堵疫情蔓延，尚毋須使用疫苗，不過部分會員（國）亦有疫苗使用時機及儲備緊急使用之疫苗，以備緊急防疫時所需。

採取不使用疫苗策略進行禽流感防治優缺點或挑戰如下表：

優點	缺點/挑戰
◆ 節省防治費用（無疫苗使用及使用後監控費用） ◆ 臨床辨識度高，易於觀察及監測 ◆ 無國際貿易影響	◆ 具有非法引進疫苗之可能性（農民不堪損失，非法引進使用） ◆ 發生疫情時高死亡率及損失 ◆ 撲殺費用高昂 ◆ 小規模飼養場生物安全無法落實，發生風險持續存在

不採取疫苗使用之國家，因其認知：

（1） 應先透過早期偵測及快速反應措施（包括移動管制、撲殺清場及主動監測等）來處理可疑病例及疫情。

（2） 疫苗不能保護禽鳥免於禽流感病毒感染。

（3） 疫苗免疫後，臨床上及實驗室不易區別已感染之動物（如抗體陽性反應是經免疫或感染所導致）。

（4） 所使用之疫苗需額外費用支持，並需投注經費進行疫苗免疫後監控調查。

（5） 需要利害關係人一致支持，尚須更多科學證據與時間進行風險溝通。

經彙整分析，會員（國）控制 H5N1 亞型 HPAI 主要遭遇困難及挑戰為：

（1） 小規模飼養場生物安全無法落實，發生風險持續存在，尤其是後院禽群。

（2） 存有開放式或放牧式飼養之鴨群，難以防範病毒入侵。

（3） 野鳥媒介傳播問題。

（4） 動物移動管制不易（如非法移動、複雜動物交易系統）。

（5） 缺乏相對應之法律規範支持，無強制力。

（6） 邊境非法動物及其產品運輸管制無法確實（尤其是中國大陸及東南亞等長邊境內陸國家）。

（四）第四部份：OIE/JTF禽流感監測計畫及清邁大學獸醫學系介紹專題報告

1. 2008-2010 年OIE/JTF禽流感監測計畫於亞洲進行野鳥及家禽禽流感監測結果概論

（OIE 亞太區域代表處副主席 Dr. Kenji Sakurai 主講）

候鳥路徑家禽與野鳥禽流感監測計畫為 5 年計畫，鎖定亞洲地區自 2008 年開始執行，目的在於找出候（野）鳥於家禽禽流感疫情導入或傳播媒介上之直接證據，進而研擬相關措施，改善亞洲地區 H5N1 高病原性禽流感疫情狀況。

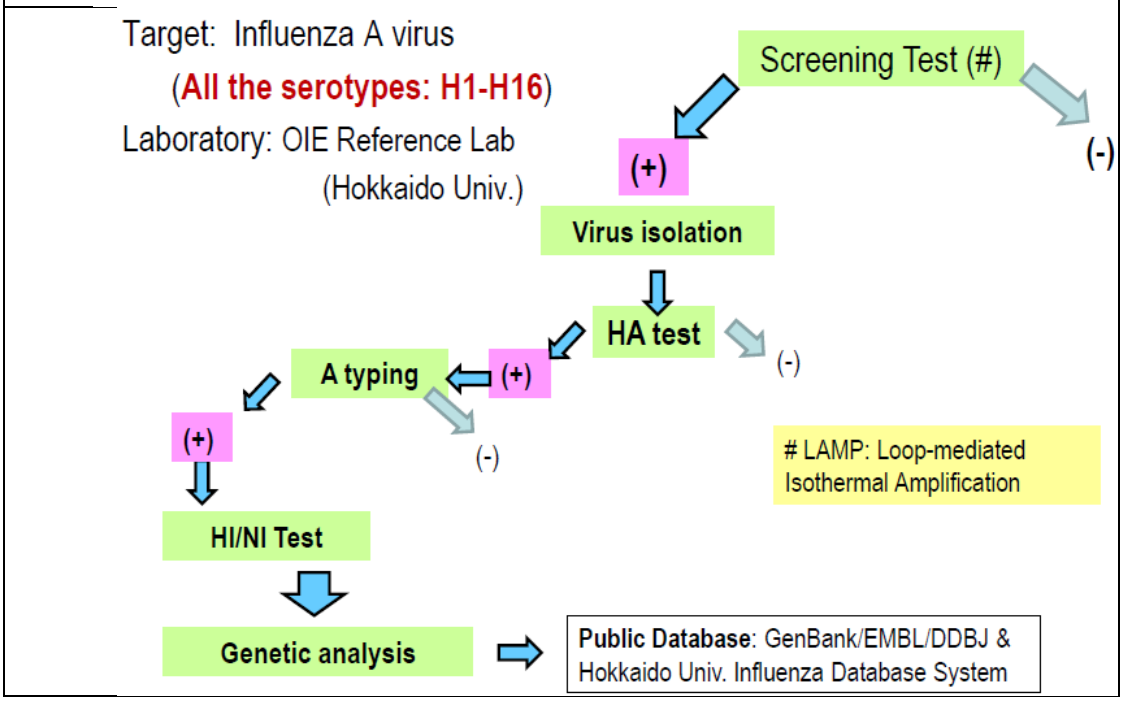
選定亞洲候鳥遷徙路徑（Asian migratory bird flyways）必經且近期發生 H5N1 案例之國家，配合當地鳥類專家（ornithologists）進行鳥種辨識及採檢分析。

採檢樣本包含候鳥、家禽及環境樣本：

Wild bird	• Number : 100 birds • Sample : 2 swabs (cloacal & tracheal) • Species : Anseriformes (e.g. Bar-headed goose, Mallard, Whooper Swan) and other species of water bird
Domestic bird	• Number : 300-400 birds • Sample : 2 swabs (cloacal & tracheal) • Species: Mainly duck • Premise: Mainly backyard farm and live bird market (Within a 30 km radius of wild bird capturing sites)
Env.	• Number: 10-100 samples • Sample: dead wild birds, fresh droppings and lake water

於早春候鳥北返（1-3 月）及早秋候鳥渡冬（9-10 月）時進行採樣，監測期程與檢測流程如下：

Month	2009	2010	2011
1		Vietnam (North)	
2			Vietnam (South)
3	Vietnam (North)	Vietnam (South) Laos	
4	Vietnam (South)		
5			Mongolia 1
6			
7	Mongolia	Mongolia	Mongolia 2
8-9			Mongolia 3 Vietnam (North)
10		Vietnam (South)	Vietnam (South)

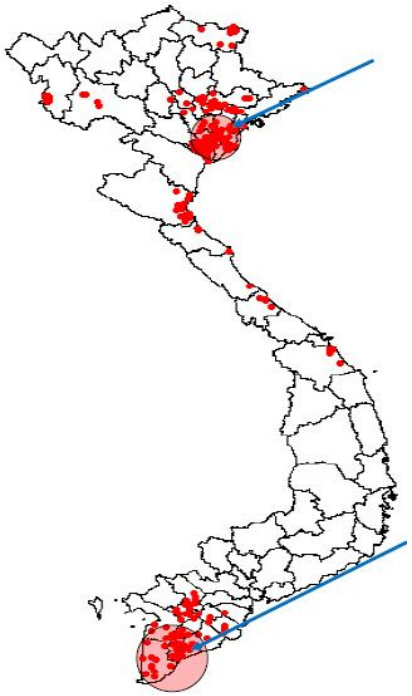


分析寮國、蒙古及越南監測結果，2009-2011 年僅於家禽樣本中檢出 78 株禽流感病毒株，野鳥及環境樣本均無檢出病毒。而 78 株病毒株均來自越南南部監測點鴨隻樣本（其中 1 株為 H5N1，自紅面番鴨分離出），寮國、蒙古及越南北部採集樣本均呈陰性。檢驗結果如下：

Countries: Laos, Mongolia and Vietnam

Category	No. of bird/sample	Virus (+)
Wild bird	887 birds	0
Domestic bird	2,675 birds	78
The environment	3, 644 samples	0
Total		78

越南採樣點：



Outcomes of AIV Study in South Vietnam, in 2009-2011

Round (Time)	1st R (Apr'09)	2nd R (Mar '10)	3rd R (Oct '10)	4th R (Feb '11)	total	Virus (+)
Wild bird	105	107	-	111	323	0
Domestic bird	300	300	300	400	1,300	78
Environment	39	20	-	32	91	0
Total	444	427	300	543	1,714	78

Kind of bird	no. of bird	Virus (+)
Duck	947	77 (8.1%)
Muscovy duck	322	1 (H5N1) (0.31%)
Chicken, goose	31	0

78 株病毒株中，45 株自後院禽群樣本分離出，32 株來自活禽市場樣本，剩下一株自屠宰場檢出。檢出毒株以 H9N2 最多，其次為 H6N2，應通報 OIE 之通報性禽流感（NAI）僅有自活禽市場所分離之 H5N1 一株，78 株檢出種類細項如下：

	1st round	2nd round	3rd round	4th round
No. of isolate	39	1	25	13
Serotype	H3N2 (1) H3N8 (1) H4N6 (7) H9N2 (26) H11N3 (3) H11N9 (1)	H9N6 (1)	H6N2 (24) H6N6 (1)	H5N1 (1) H6N2 (7) H11N5 (1) H11N9 (2) H12N5 (2)

該計畫執行結果顯示，所有病毒均分離自健康之鴨隻，以越南南部活禽市場內檢出帶有 H5N1 病毒之紅面番鴨為例，其可能於 H5N1 高病原性禽流感傳播及地區永存扮演關鍵角色，由於該鴨隻本身未有任何臨床症狀，除透過採檢外，不易被觀察發現，故容易使病毒持續循環於禽群及環境中。

藉由該計畫結果分析發現，自越南南部活禽市場所分離之 H9N2 已有基因重組現象，且具有感染雞隻之潛勢（potential），因此應有相關措施於活禽市場內實施，提供預警，以利亞洲發生國禽流感之控制與預防。

2. 清邁大學獸醫學系介紹

（清邁大學 Dr. Tongkorn Meeyam 主講）

清邁大學是清邁市唯一一所國立大學，亦為泰國北部首屈一指高等學府，於 1964 年 1 月由普美蓬國王殿下批准創建，以醫科和工科出名，設有 3 個學院（衛生科學學院、科技學院及社會科學學院）、16 個學系，獸醫學系係屬衛生科學學院，除了為泰北學生提供高等教育機會，亦提供鄰近中南半島地區外國學生高質素學習環境。

該學系透過獸醫公共衛生區塊配合國際相關組織，強化農民、獸醫師及旅行者（Traveler）連結及生物安全概念，推動同一個世界，同一個健

康（One world，one health）疾病防治工作，並進展為 Ecohealth，整合相關研究於生態（Ecology）、健康（Health ）及永續性（Sustainability）之應用。

清邁大學獸醫學系獸醫教育（DVM）為 6 年學程，另開設 4 項碩士學程（分別為獸醫醫學、獸醫公共衛生、健康醫學、與生物技術學程）及 2 項博士學程（獸醫醫學與生物技術），碩士部分除生物學程外，其餘學程均有國際合作計畫可供申請就讀，如獸醫公共衛生（MVPH）學程即與德國柏林大學合作，將碩士班學生送往德國研修。

清邁大學另參與國家多項研究計畫，包括亞洲夥伴國家禽流感預防控制成效研究、東南亞新興人畜共通傳染病（EID）生態系統（Ecosystem）良好管理方法研究，以及承接辦理相關訓練課程（如 Epidemiology and Surveillance of Zoonotic Transboundary Disease、One Health Leadership、Surveillance, Emergency Preparedness and Response）、國際研討會（The Concept of One Health-One Medicine），並於該大學內建立跨專業團隊 EcoHealth/One Health 對策中心（Transdisciplinary EcoHealth/One Health Resource Centre），納入健康醫學、社會、經濟及生態專家，透過於東南亞地區之研究、能力建構與風險溝通，促進該區域健康福利及社會公平持續發展之目標。

（五）會議結論及建議

結論：

1. 各參與會員（國）自第 3 屆會議後，均藉由國家獸醫服務體系以不同程度作為，改善及強化 6 個階段（農民、私人獸醫師/輔助性專業人員、地方獸醫服務體系、地方實驗室、中央實驗室及中央獸醫服務體系）疾病通報機制。
2. 部份亞洲會員（國）仍遭遇動物健康資訊連結之困難與限制，包括：

（1） 對疾病認識及疫情通報認知不足。

（2） 延遲通報問題。

（3） 缺乏鼓勵疾病通報措施，如不適當補償機制或過低之補償，致使通報意願低下。

（4） 欠缺或有限之田間適當採檢診斷及動物傳染病鑑定能力，仍待加強建構。

（5） 地方及中央實驗室診斷能力有限，且缺乏實驗室間網絡及聯繫。

（6） 有限之立法、資源及經費支持。

3. 部分參與會員（國）藉由訂定/修訂鼓勵方案或規定，鼓勵農民、私人獸醫師/輔助性專業人員通報疫情至相關獸醫權責機關；另亦改善聯繫工具與方法（透過電話、傳真、網路、簡訊及廣播等），增進田間與地方層級之疫情通報。
4. OIE 須與其他國際性（區域性）組織及促進雙邊發展機構之良好溝通及合作，以避免於動物健康促進工作上造成資源重複使用及浪費。
5. 亞洲 OIE 會員（國）雖於 HPAI 防治改善工作上做出重大努力，H5N1 HPAI 仍於某些國家持續存在或再發，甚至有新基因型（Clade）之發生。
6. 亞洲會員（國）將持續強化早期偵測、移動管制、撲殺清場、生物安全、疫情發生後清除消毒（Decontamination）措施及監測作為，努力清除亞洲 HPAI。
7. 重申使用禽流感疫苗預防及控制 H5N1 亞型 HPAI 為特殊情形下之輔

建議：

1. 重新檢視修訂相關法規，如適當補償標準，提供適當誘因鼓勵農民與獸醫師通報動物疾病疫情。
2. 國家獸醫服務體系應持續對利害關係人進行宣導教育，增進農民、私人獸醫師/輔助性專業人員動物疾病辨識能力、專業知識及通報意願。
3. 國家獸醫服務體系應適當支持及維持實驗室檢診能力（人力及物資），以符合動物疾病監測及控制之需求。
4. 亞洲 HPAI 持續發生或散發之國家應持續地檢視所行之相關措施是否適宜，並採取適當且有科學證據支持之控制措施。
5. 亞洲 OIE 會員（國）應分享國內 HPAI 病毒株資訊，包括抗原性及基因性狀，以利共同防治及預防。
6. 參與會員（國）應努力強化動物健康網絡連結及相互間聯繫，分享相關資訊與數據，促進亞洲地區健康狀態。
7. 鼓勵尚未參與會員（國）使用 OIE PVS 評估、GAP 分析及立法任務，強化改善獸醫服務體系及國家動物疾病監測系統。
8. 妥善安排 OIE 強化亞洲動物衛生資訊連結區域會議，鼓勵亞洲 OIE 會員（國）朝下列主要目標，強化區域內動物健康資訊連結：
   （1） 分享國家層面動物健康資訊連結之更新資訊。
   （2） 分享動物健康資訊連結之經驗、良好作法及所學重要注意事項。
   （3） 檢視各會員（國）於動物健康資訊連結之進展及成果。
   （4） 討論有效之動物健康資訊連結策略，強化國家及亞洲區域層面動物疾病預防及控制措施。

四、心得與建議

檢視過去一年各會員（國）進展報告，疾病通報體系無法有效運作主要關鍵仍以農民問題為首要，包括對疾病辨識能力及通報知識之不足、通報意願低下及延遲通報等，經會議討論，日韓等先進國家表示，若未持續性地進行相關宣導活動、提供鼓勵措施及積極作為，難以維持農民階段即時通報行動，以日韓 2010 年發生禽流感與口蹄疫疫情為例，均因農民延遲通報導致疫情自點狀轉為面狀發生，造成後續疫情處理時間延長及產業嚴重損失，為鼓勵通報，掌握任何可疑病例，即時處置控制疫情，日本也於處理疫情過程中，檢視調整補償費比率，由 80%提高為 100%。

各會員（國）所提人力及經費資源不足問題，也是近來影響國家獸醫服務體系執行成效與動物健康資訊有效連結之重要因素，依我國經驗，係透過不停地檢視業務內容，簡化作業程序、加強人員專業質能訓練及合理分配預算，才能使這些因素影響趨於和緩。另外透過本次會議，充分了解 OIE 積極藉由各項計畫，促使亞洲會員（國）加強國際交流，鼓勵人才海外參訓及實驗室標準化管理與認證，增進該等國家實驗室檢診能力、流程一致化及結果公信力，我國地方與中央實驗室於此區塊較有不足，是未來我國獸醫服務體系執行強化工作中應重視及強化之一環。

關於候鳥媒介傳播禽流感問題探討部份，OIE 亞太區域代表處因應 2010 年日韓發生之 H5N1 亞型 HPAI 疫情，嘗試以監測計畫找出候鳥媒介傳播與導入家禽場禽流感病毒之科學證據及關聯性，結果均未於候鳥及環境樣本中分離出禽流感病毒，比較檢視其監測方法與我國執行方式，該計畫監測樣本數過少且採樣時間期短，檢測結果難具有代表性，也易因採樣時機問題而漏失檢出病毒機會，應固定採樣點、增加樣本數及透過該國當地常駐人員長時間採樣，增加病毒檢出機會，以利後續病毒株間比對分析。

有關 HPAI 之防治，OIE 與各會員（國）均著重於 H5N1 亞型 HPAI 預防及控制，其除可造成家禽大量損失，部分基因型亦與人類公共衛生相關，因此於 H5N1 亞型 HPAI 防治作為上，多採取移動管制、撲殺清場、加強監測等傳統性

防疫措施，以達清除或清淨之目的。會議中檢視部分疫情發生嚴重會員（國）輔助使用禽流感疫苗進行控制結果，病例數均可有效降低，且不再傳出疫情，該等國均表示將持續使用。由於全球至今未有使用疫苗而將禽流感病毒成功清除案例存在，且病毒可能於環境長期循環，導致病毒變異壓力增大，OIE 建議疫苗使用應有退場機制及其時間點，且僅作為輔助性措施，仍須配合傳統性主要措施共同防治，才能有效清除或清淨 HPAI。

五、致謝

感謝 OIE 支持出席會議之出國旅費與相關安排，以及對亞洲地區動物健康資訊連結與 HPAI 共同防治之協調與努力。

六、附圖

圖 1、本屆會議主辦單位（OIE 亞太區域代表處、泰國農業部畜產局）與各參與會員（國）代表合影

圖 2、我國與會代表（楊文淵科長）於會中報告剪影

圖 3、與 OIE 亞太區域代表處主席 Dr. Itsuo Shimohira（左前數第三位）及副主席 Dr. Kenji Sakurai（左後第一位）會後合影

圖 4、我國與會代表（左三）於接待晚宴與孟加拉（左起）、斯里蘭卡、尼泊爾、不丹、日本（右三）、緬甸及越南（右一）代表合影

圖 5、清邁獸醫學系系館

圖 6、我國與會代表於清邁獸醫學系診斷實驗室前與南韓（左起）、尼泊爾、OIE 亞太區域代表處、蒙古、中國大陸、香港、泰國、孟加拉及斯里蘭卡（右一）代表合影

七、附件

（一）附件 1、使用及不使用禽流感疫苗會員（國）簡報資料。

（二）附件 2、本屆會議結論及建議（英文版本）。

Possible reasons of HPAI endemicity in Bangladesh

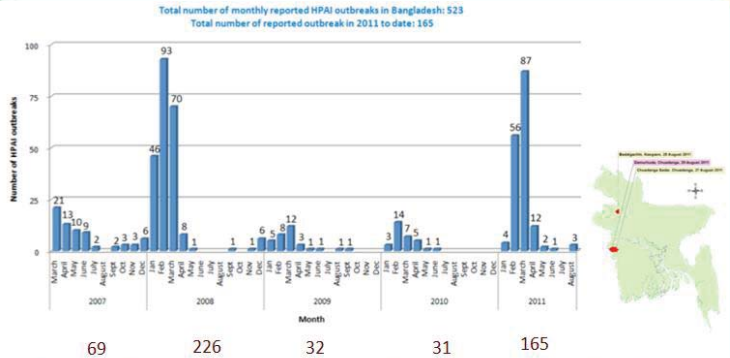
- Nationwide extensive poultry husbandry
- Unorganized live bird marketing
- Uncontrolled movement of poultry
- Insufficient biosecurity practice in commercial poultry farms
- Inadequate surveillance coverage
- Less awareness
- Weak enforcement of legislation

HPAI Situation in Bangladesh and way forward

11 September 2011

Department of Livestock Services
Bangladesh

Reported HPAI outbreaks, Bangladesh Till 04 September, 2011

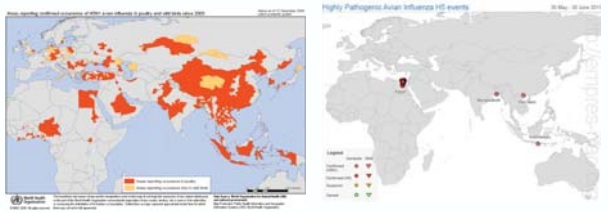


69 226 32 31 165

•Five waves of outbreaks are discernible during the last 4 years and 6 months with apparently conspicuous seasonality.

(as of 6th September 2011)

HPAI world situation



2006 2011 (30 May-30 June)

• 63 countries were infected, most of them are under control

•It remains endemic only in six countries: Bangladesh, China, Egypt, India, Indonesia and Vietnam.

Strategies to control H5N1 HPAI in Bangladesh

- Early detection, early reporting and early response
- Protect farms by enhancing bio-security
- Reduce potential transmission by improving sanitary conditions in Live Bird Markets (renovation, training for cleaning and disinfection)
- Raise public awareness
- Employ "One Health approach" to maximize the efforts for controlling the Emerging Infectious Diseases (EID).
- No vaccination against H_5N_1

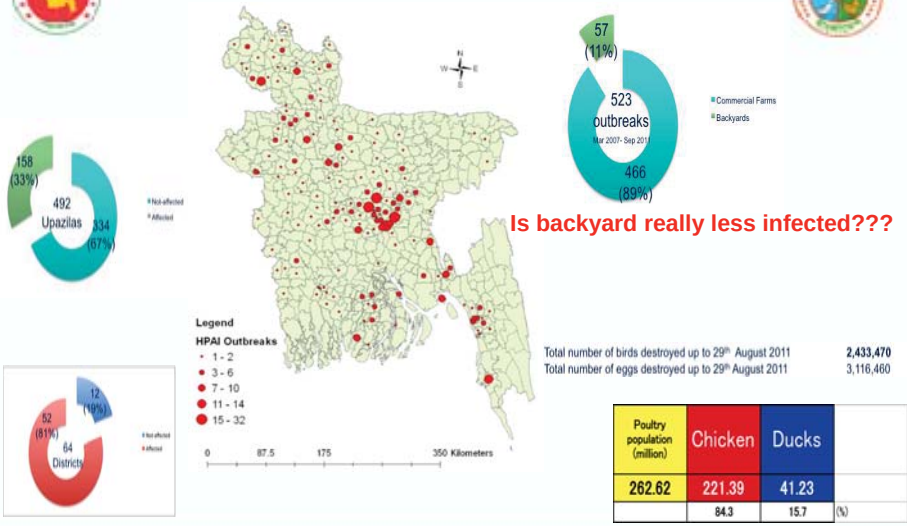
Yearly outbreaks in commercial and Backyard Poultry

Year	Commercial	Backyard	Total
2007	44	25	69
2008	208	18	226
2009	23	09	32
2010	29	02	31
2011	162	03	165
Total	**466**	**57**	**523**

Activities performed

I. A: Passive Surveillance
I.B: Active surveillance using Web-based SMS Gateway
II.A: Poultry farm biosecurity
II.B: Improvement of Biosecurity in Live Bird Markets
III: Strengthening Laboratory Diagnosis
IV: Disease Control
V. Awareness programs

Where did it occur?



Is backyard really less infected???

Total number of birds destroyed up to 29th August 2011	2,433,470
Total number of eggs destroyed up to 29th August 2011	3,116,460

Poultry population (million)	Chicken	Ducks	
262.62	221.39	41.23	
	84.3	15.7	(%)

Summary findings

Experiences deserve attention--

- Under reporting in particular in backyards
  - Inadequate manpower for surveillance
  - Inadequate social motivation and awareness
- Weakness in response
  - Weak enforcement of movement control in infected and control zone
  - Post outbreak decontamination is generally incomplete
  - Post outbreak surveillance not conducted properly
  - Budget allocation for culling and decontamination is not delivered on time

Present situation

Despite the steps undertaken--

- Number of HPAI cases increases unusually in 2011
- Sporadic outbreaks take place in hot (humid) seasons also
- There are unusual duck deaths (in Netrokona area)
- In addition to previous 2.2 clades, new clades of H_5N_1 virus (2.3.4, 2.3.2.1) identified in different regionsCVO¥Viral Clades.doc
- FAO alerts that a mutant strain of the virus is spreading in the region

Summary findings

Experiences deserve attention--

- Insufficient biosecurity measures
  - Conceptual and structural biosecurity points are not taken into consideration despite clear guidance in Acts, rules and policies in establishing poultry farms
  - Operational biosecurity not practiced properly
- Duck mortality associated with H_5 virus
- Communication
  - Inadequate communication/motivation campaign

The Strategies could not be implemented completely

Summary findings

Experiences deserve attention--

- Under reporting in particular in backyards
  - Inadequate manpower for surveillance
  - Inadequate social motivation and awareness
- Weakness in response
  - Weak enforcement of movement control in infected and control zone
  - Post outbreak decontamination is generally incomplete
  - Post outbreak surveillance not conducted properly
  - Budget allocation for culling and decontamination is not delivered on time

Way forward

Continued……..

How to respond higher reported cases —

- Build surge capacity at grass root level of DLS
  - Increased number of DLS staff (Vet, sub-technical staff)
  - Budget allocation and delegation of power to meet emergency
  - Power or provision to higher manpower to respond

Way forward

How to promote reporting —

- Enhanced Motivation
  - Involve community leader, Social elites and local institutions (School, Madrasas, Mosques)
  - Engage commercial farmers' association to create awareness among people
  - Identify a focal point in each village who will link with local veterinary service
  - Establish a hotline (toll free) at DLS where general public can report

…… continued

Way forward

Weak response —

Movement control –

- Impose strict quarantine after suspicion
- Establish check post at major entry and exit points immediately after declaration
- Depute law enforcing agencies to control movement
- Arrange 'drill' to train all concerned for effective movement control
- Sensitize local and community leaders about the danger of movement of poultry , poultry products , contaminated materials and equipment from infected and control zone and motivate them to be proactive in movement control
- Penalize any effort to breach the movement control initiative

Way forward

Continued……..

How to promote reporting —

- Enhanced Motivation
  - Courtyard meeting
  - Hat shava / Pathosabha/video display
  - Special attention be given to ducks in duck dense area
  - Employ one surveillance worker in each union in master role till the institutional reform of DLS takes place
  - Support from Health workers , EPI workers, NGOs
- New options to be explored for effective containment

…… continued

Way forward

Post outbreak surveillance —

- Identification of surveillance zone after outbreak
- The surveillance zone should be of 3 Km radius from the foci of infection
- Contingency planning for surveillance
  - Bring veterinarians and sub-technical staff of DLS for enhanced surveillance in post outbreak surveillance
  - Support from health and NGO workers
  - Engage intern students of veterinary faculties
- Motivate general public to report any sickness of chicken and duck
- Manpower be increased in National Reference Lab. AI, CDIL and FDILs.

Way forward

Post outbreak decontamination —

- Train all concerned on post outbreak decontamination through drill or simulation
- Ensure supply of appropriate materials for decontamination
- Decontamination procedures should be adapted following the local context (For example burning of bamboo slats, hessian , use of quicklime)
- Ensure that feathers and other contaminated materials are disposed properly and contaminated equipments are decontaminated

…… continued

Way forward

Biosecurity practices

- Registration of poultry farms in the light of Animal Disease Act-2005 and Rule-2008 and National Poultry Development Policy, 2008 be strictly followed
- Timeline be given for existing farms to fulfill biosecurity conditionality
- Motivational program for commercial farms to follow biosecurity checklist
- Maintaining uniform vaccination schedule for infectious diseases other than AI

Way forward

Continued……..

Post outbreak decontamination —

- Allocate fund for hiring of manpower for post outbreak decontamination
- Sensitize community leaders about the importance of post outbreak decontamination

" Spraying is not a panacea rather ineffective if proper cleaning is not done before hand."

Administrative arrangements

- Focal points for major issues
  - DLS to designate focal points for
    - Back yard Poultry
    - Commercial/PS/GP poultry farms
    - Movement Control of birds, products or bi-products there off
    - Poultry Farm Registration
    - Lab Networking
    - Surveillance and Reporting

Way forward

Biosecurity practices

- Backyard biosecurity guideline be developed and practiced
- Poultry related Associations to be involved in monitoring biosecurity practices
- Live bird market biosecurity practice to be strengthened

Conclusion

- HPAI situation in the country is in a transitional phase
- The activities in operation need to be reviewed
- Establishment of poultry slaughter house and targeted phasing out of live bird market
- All related Projects may revise their programs based on present need

Way forward

Communication—

- Mass communication must be encouraged
- Proper care be taken to avoid any fear or panic
- A communication campaign week be observed nationwide before winter season with special emphasis on
  - Biosecurity and movement control practices
  - Disease reporting
  - Scientific and eco friendly disposal and decontamination practices
- Inter personal communication, community based communication, institutional communication be strengthened
- Sensitize Policy planners and press

Conclusion

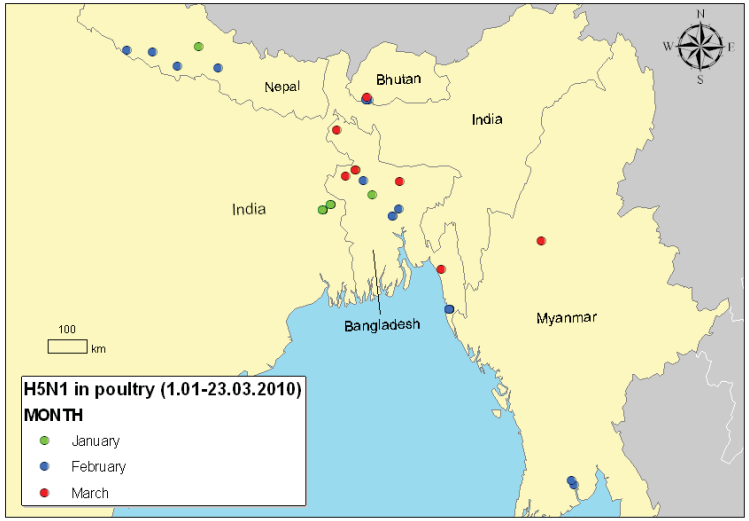
- DLS may form a committee to review implementation status of national plan and propose activities on priority basis
- Up gradation of BSL level and Accreditation of investigation labs be enhanced
- Livelihood program be undertaken to enhance transition to biosecured farming under a national poultry improvement plan

Thanks

Thanks

Department of Livestock Services, Bangladesh

Overview of last HPAI outbreak



HPAI Control and Prevention Without Vaccination in BHUTAN

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National Centre for Animal Health,
Department of Livestock,
Ministry of Agriculture and Forests,
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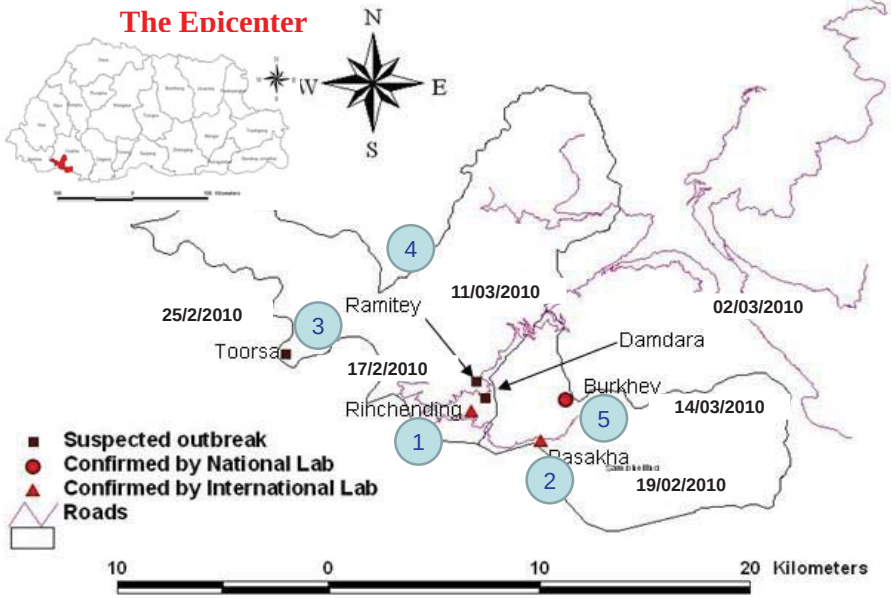
The Epicenter



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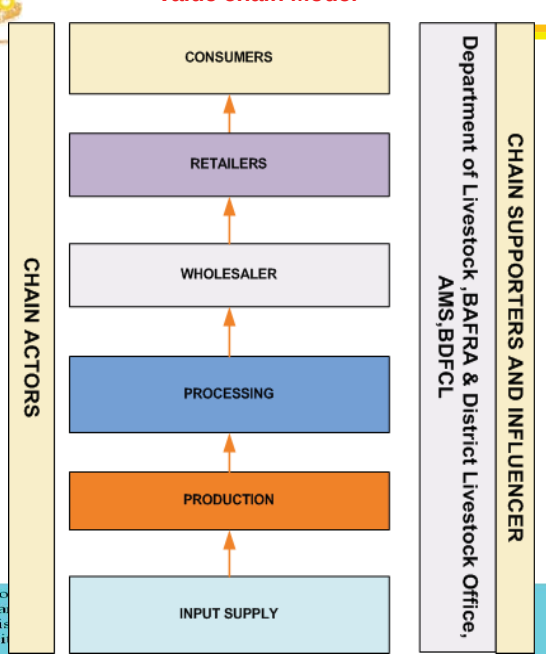
Contents

Value chain Model



This model is introduced by NPDC, developed to help the centre to bring the different stakeholders together to develop win-win situation in poultry production and marketing

- 5 outbreaks starting 18th Feb 2010 to 25th March (avg. dist. of 5 miles from Indo-Bhutan border)
- Total animal death vs. cases-18/24 (8/14-3/3-3/3-2/2-2/2)
- HPAI confirmed by NIAH, Bangkok and HSADL, Bhopal
- Analysis of HA protein- Clade 2.2 (prevalent in the neighboring state of West Bengal in India)
- Total of 5379 poultry, 921 eggs, 578 temporary sheds destroyed, with compensation worth (15000 USD = Nu.697,516)
- Fomites (humans, vehicles, feed, etc.), Illegal movement of animals, or some other unknown sources

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Position/Policy of Bhutan's HPAI control measures without vaccine

- Channelized Weekly reporting system
- Surveillance to early detection of incursion
- Upgradation of Laboratory diagnostic capacity
- Import ban of poultry/ products from affected regions
- Border control/ checking/ sealing illegal routes
- Commodity training of Veterinary staff to prevention and response to HPAI outbreak
- Upgrading bio-security of poultry farms at all levels
- Awareness campaigns from the grass root level

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Poultry industry in Bhutan

Sl .no	Type of farms	Number of farms
1	Backyard farms (< 100 birds)	671
2	Semi commercial farms (100-1000 birds)	380
3	Commercial farms (> 100 birds)	9
Total		1060

- Hy-line Brown, Ross 308, RIR and WLH are maintained in commercial/semi commercial farms
- Most of the parent stocks to produce eggs maintained by government and supply to private hatchery
- DOC are directly supplied to farmers, or alternatively, 12weeks pullets

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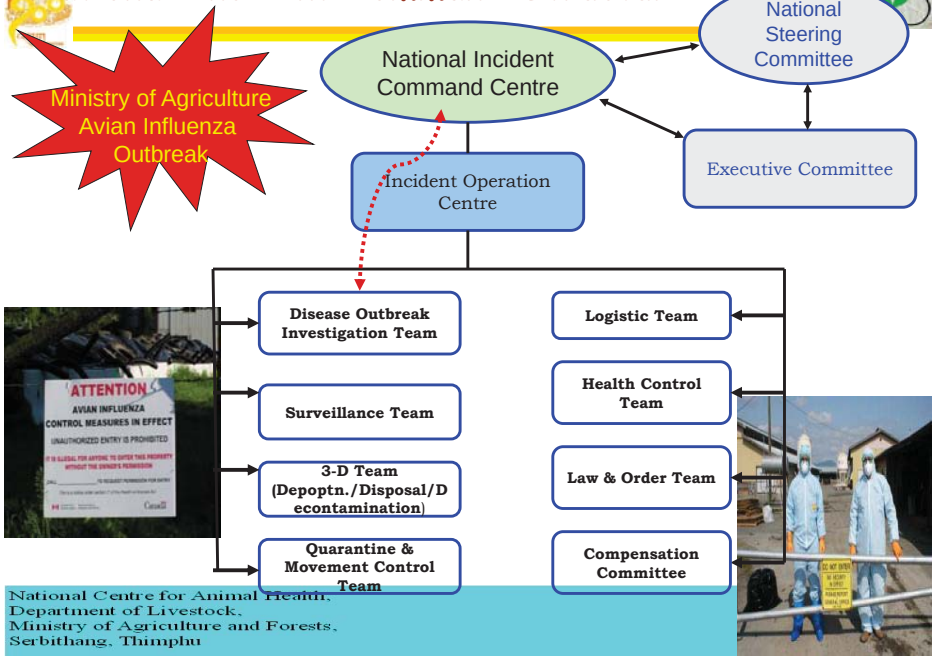
National Incident Command Structure



Principal control/preventive measures against HPAI in Bhutan

1. Prevention of incursion of HPAI in Bhutan

Veterinary Vigilance Team(VVT)

- Activated upon outbreak in the neighboring countries/within the country
- Carryout clinical and laboratory surveillance on daily basis
- Awareness and advocacy within respective jurisdiction

Border Vigilance Team (BVT)

- Active vigilance over the moment of human and animals/ products
- Ban on movement of related products during the period of outbreak
- Spraying of vehicle at entry and exit points in protected and surveillance zone

2. Rapid Response to HPAI outbreaks to reduce its impact (RRTs)

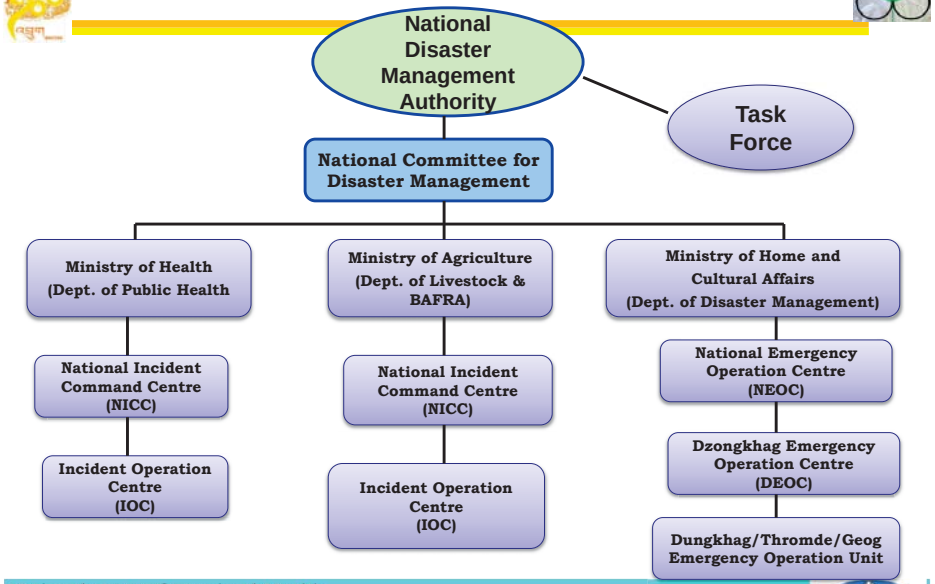
3. AH-HH collaboration to increase awareness & control human infection

Active surveillance programme on HPAI in Bhutan

Team composition: *Veterinary Epidemiologist, V. O, Field staff, Laboratory technicians, BAFRA*

1. Prevention phase
   - Clinical surveillance
   - Laboratory surveillance
   - Targeted surveillance
2. Surveillance in protection and surveillance zone
   - Surveillance Team formulation and responsibility
   - Materials and logistics
   - Premises inventory
   - Number and type of sampling
3. Surveillance to declare virus free
   - Sampling and laboratory confirmation; declaration after 90 days upon non confirmation of disease

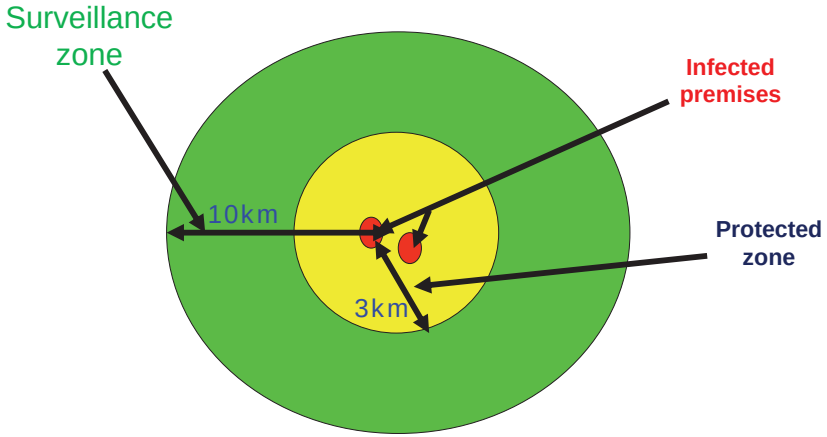
Institutional Arrangement for Influenza Pandemic Response



Challenges

- Illegal transport of poultry and its products
- Increased movement of human and vehicles
- Water fowls and migratory birds flying across the borders and forests
- Extensive/ semi intensive poultry rearing system in small and backyard poultry farms
- Rugged terrain and small scale poultry farmers at scattered locations making surveillance difficult
- Porous border and unidentified illegal routes
- Increased trend in poultry industry
- Low bio-security in poultry farming system

Disease Control Zones



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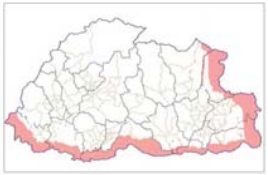

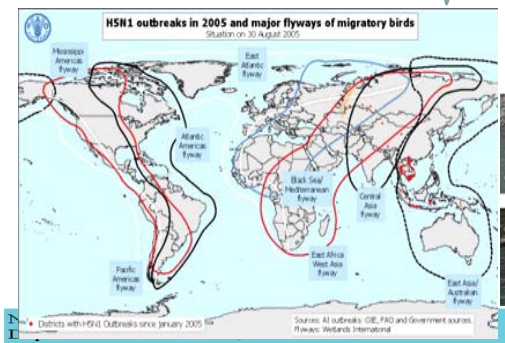

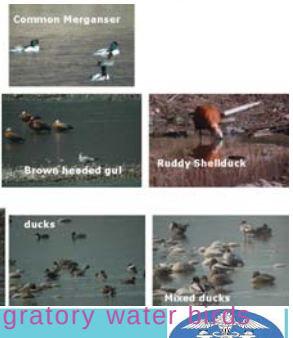

Other migratory water birds

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Advantages

- ✓ Active involvement of VVT, BVT, field staff and laboratory personnel
- ✓ Constant update regarding the outbreaks outside the border and overseas
- ✓ Constant vigilance over wild and migratory flocks through sampling – BNC and water fowls
- ✓ Proper diagnostic capacity and facilities
- ✓ Capacity of trained staff to respond to the HPAI outbreak
- ✓ Proper bio-security of poultry farms
- ✓ Proper and channelized reporting systems from root level
- ✓ Strengthened awareness of the poultry owners and consumers

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Long term strategy to eradicate HPAI without using vaccine

- One health initiative through multi-Sectoral approach
- Collaboration between OIE/WHO/ FAO for pandemic preparedness plan and support
- High standard laboratory diagnostic capacity
- Well managed and bio-security in poultry farms
- Close border vigilance for illegal trade routes and capacity building
- Develop & implement risk communication strategy
- Prepare health & essential service contingency plan

Major concerns over the HPAI control measures without vaccine in Bhutan

- Frequent outbreaks in the neighboring country could incur pressure
- Increased illegal movement of animals and animal products
- Shortage of manpower in all the check points due to increased movement and porous border
- Extinction of endangered species of Bhutan due to unidentified outbreaks
- Uncontrolled migrant wild birds and water fowls trespassing the birds of countries along their routes

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Medium and long term view to control/ eradicate/ prevent HPAI in Bhutan

- Monetary support for the training of field staff and capacity building
- Establishment of strong border vigilance
- Improvement of diagnostic and laboratory facilities – cell culture and virus isolation
- Bio-security of poultry farms to restrict unauthenticated movements of human and animals
- Active surveillance and sampling along the risk areas
- Stockpile Antiviral, PPE (sustenance), etc

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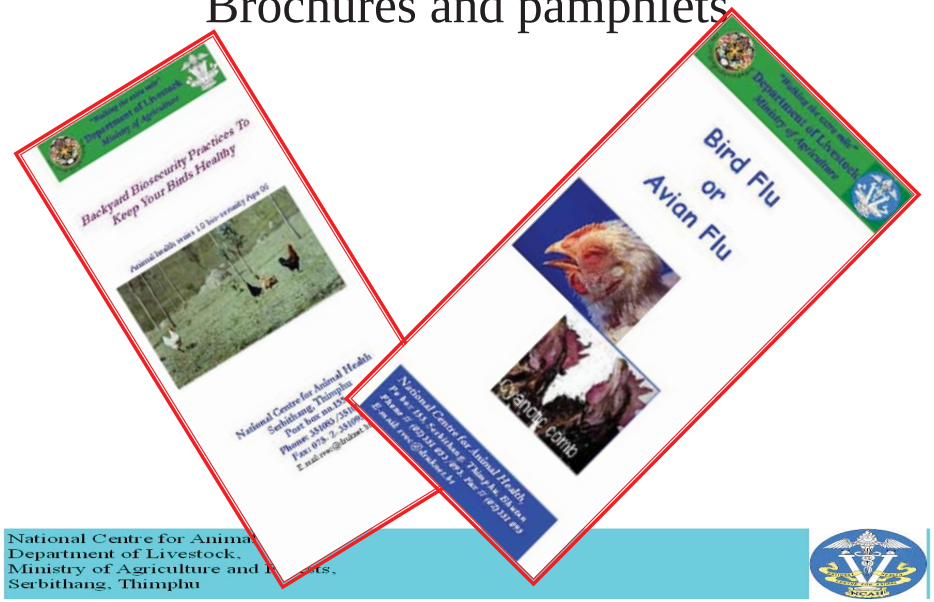
Brochures and pamphlets

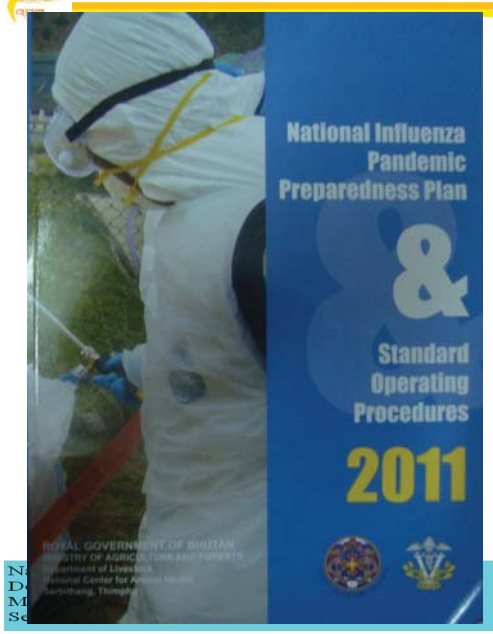


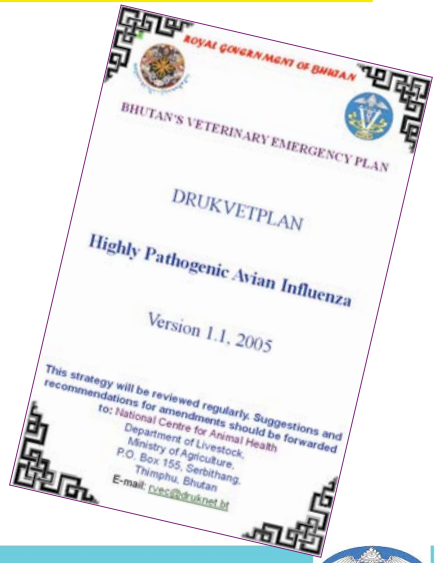
RIT/card test at field level

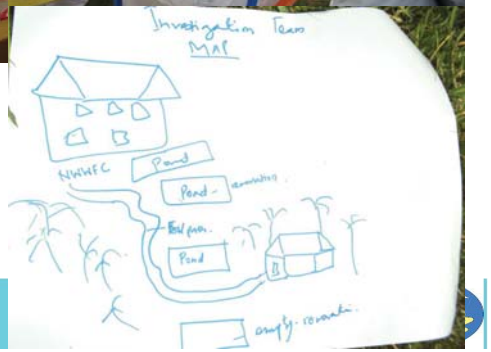
Border control & disinfection

The posters

NIPPP documentation







AI commodity training
(field simulation exercise)

Public awareness programme

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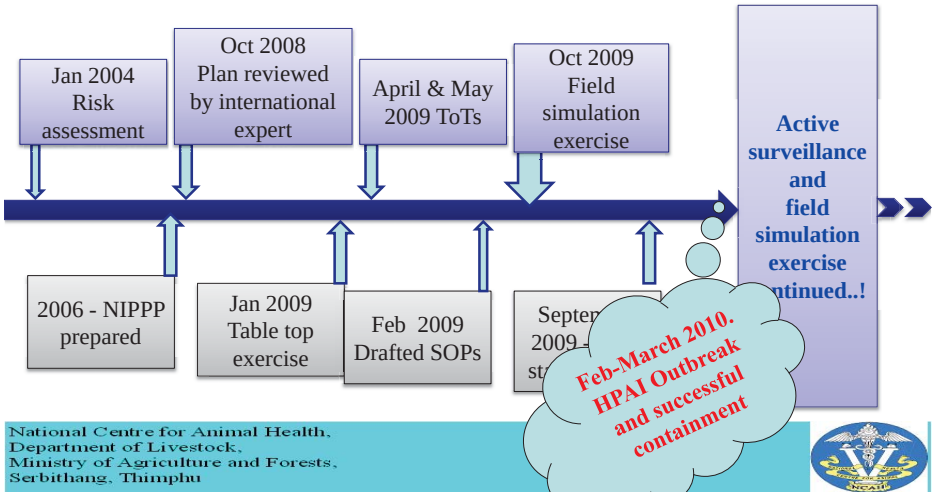
Milestones of outcome from the project



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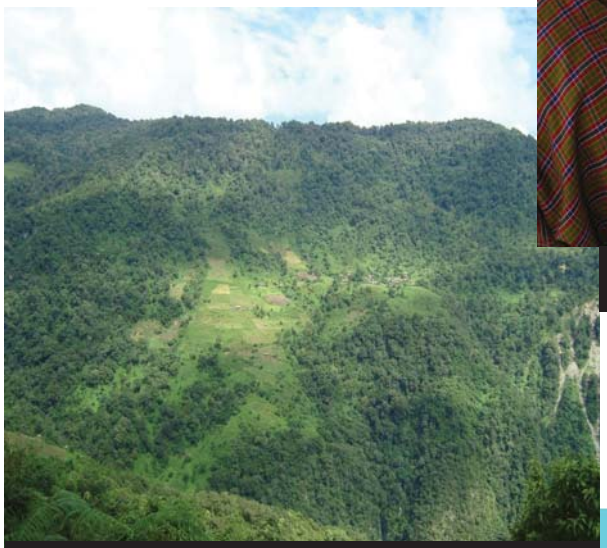
Awareness campaign in villages



Scattered villages across mountains and rugged terrain


Thank you . . . !
For your attention

Recent HPAI outbreak status from 2007-2011

- From 2007 up to date 8 outbreaks in five provinces of Cambodia
  - Kampong Cham 2 outbreaks (2007 & 2009)
  - Kandal 1 outbreak (2008 & 2011)
  - Takeo 2 outbreaks (2010 & 2011)
  - Prey Veng 1 outbreaks (2010)
  - Banteay Meanchey 1 outbreaks (2011)
- The last outbreak of HPAI in July 2011 and up to now no more HPAI outbreaks

Department of Animal Health and Production
Ministry of Agriculture, Forestry and Fisheries

HPAI Control and Prevention without Vaccination in Cambodia

4th OIE Regional Meeting on Strengthening Animal Health Information Networking in Asia under the OIE/JTF Project for Strengthening HPAI Control in Asia

Chiang Mai, Thailand 14-16 September 2011

NGET KIRY, Epidemiology Section, NaVRI, DAHP

Recent HPAI outbreak status from 2007-2011 (Cont.)

Year	No. of Outbreaks	Number of Sick and Death Species			Culling	Total	Result	Prakas
		Chicken	Duck	Wild bird				
2007	1	292	10		938	1240	10.04.07	11.04.07/114
2008	1	80	40		344	464	16.12.08	16.12.08/591
2009	1	143			875	1018	21.12.09	22.12.09/613
2010	2		19542		1260	35270	29.01.10	02.02.10/040
		199	704		264	1167	27.04.10	27.04.10/144
2011 (Jan-Dec)	3	48			174	232	29.01.11	01.02.11/051
				29	0	0	18.07.11	27.07.11/415
		100			480	580	28.07.11	28.07.11/417
Total	**8**	**862**	**20296**	**29**	**4335**	**39971**		

Source: Department of Animal Health and Production

Outlines

- Recent HPAI Outbreaks Status
- Poultry Industry
- Policy of HPAI Control Measures
- Principal Control/Preventive Measures
- Challenges of HPAI Control Measure
- Major Concern Over HPAI Control Measure
- National Strategy on HPAI Control and Eradication

Policy of HPAI Control Measure

- Implementation of effective poultry movement control
- Upgrade bio-security
- HPAI surveillance and control at the village level
- National surveillance and investigation capacity
- Laboratory capacity
- Communications and public awareness
- Restructuring poultry production
- Policy on diseases control and preparedness plan

Poultry Production System

Family Production System 80-90%

- Poultry (local breed) 13,992,611 heads
- Family consumption
- Average of 12-13 head

Semi-Industrial System

- Broilers and Layers 307 farms (1,195,082 heads)
- Ducks (meat-egg) 568 farms (5,355,816 heads)
- Between 500-5000 head

Source: Annual Report of DAHP in 2010

Principal Control/Preventive Measures Against HPAI

Surveillance

-Main strategy is active surveillance of poultry at production level for early detection of outbreaks, using VAHWs, provincial and district veterinarians.

-Active surveillance of poultry markets

-Sentinel duck flocks for presence of antibody

Early response

-Early response to outbreaks through selected culling, complete investigation and movement control

Public Awareness

-Awareness program to raise public, trader, marketer, and farmer understanding of the disease

Poultry Population in 2010

Chicken			Duck			Geese	Total
L. Chicken	Layer	Broiler	Layer	Broiler	Muscovy		
13,992,611	398,423	796,659	3,575,749	1,570,466	209,601	15,852	20,559,361

Source: Annual Report of DAHP in 2010

Response to Outbreaks

- MAFF has established an Interministerial Committee for Control of HPAI
- and Provincial Sub-Committee for HPAI control

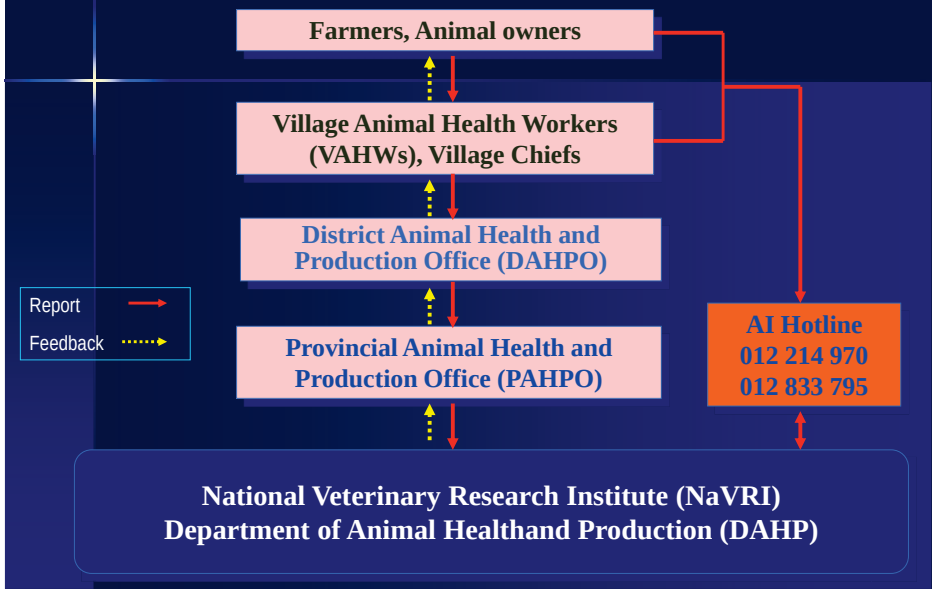
Village Animal Health Worker (VAHW)

- 5,000 VAHWs are active in 13,703 villages. VAHWs are selected locally and receive short training by DAHP or other Non-Government Organisations (NGOs), following standard programs approved by DAHP
- VAHWs represent approximately 70% and the provincial staff 30% of animal health expertise in the provinces

Response to Outbreaks (cont)

- **Sub-degree #16 of Animal and Animal Product Sanitary**
- **Pass legislation** (*prakas)* to establish temporary international border checkpoints and ban the importation, transportation, sale or purchase of live poultry, eggs, fresh and refrigerated poultry meat, and any products of both wild and domestic poultry origin from countries infected with HPAI
- **Impose inter-provincial transport bans** by the refusal to issue transport health certificates
- **stamp out new outbreaks** in confirmed HPAI-infected areas
- **allow selective culling**
- **alert provincial veterinary services and VAHWs** to report and control any suspected outbreaks

Disease Reporting System



Task Force 3

- conducts culling and destroying the carcasses in infected places
- controls the checkpoint at the border and the poultry movements in the country
- trains the provincial action teams
- conducts referencing of semi-commercial and commercial farms
- teaches the farmers how to improve the bio-security
- Each Task Force is managed by a Chief. A National Coordinator coordinates the 3 Task Forces activities reporting it to the Director of DAHP and the MAFF. This organization is supported by a National Consultant and Technical Advisor.

Response to Outbreaks (cont)

The DAHP launched 3 taskforces with specific targets

Task Force 1

- TF1 Information Task Force
  - records information from the field
  - produces daily report about AI situation
  - designs material (leaflets, TV production, radio broadcasts...)
  - spreads information to their TF, Director of DAHP and MAFF
  - trains provincial teams to organise information meetings
  - manages the meetings planning in the district

Challenges

- Poultry are exposed to common poultry diseases (ND, Fowl Cholera ... etc.)
- Farmers cooperation (reluctant)
- No compensation have been made
- Late of animal disease reporting
- Lack of reagents, kits for diagnosis
- Illegal animal movement from neighboring countries

Task Force 2

- Task Force 2
  - investigates
  - collects samples
  - conducts surveillance
  - records database
  - trains provincial investigation teams

National Strategy on HPAI Control and Eradication

- Veterinary Service Strengthening
- HPAI Surveillance investigation and response
- Strengthening bio-security in poultry production and trade
- Information Education and Communication
- Pandemic Planning
- Strategy Management

Main constraints

a, Weak veterinary service

- Lack of laws and regulations and very difficulty in implementing
- Low human capacity (management and technical)
- Low financial resources for staff salaries and operations (transport, communication)

Main constraints (Cont)

b, Poorly developed poultry sector

- Dominated by backyard poultry production
- Farmer with low level of education and knowledge
- Low public awareness
- Poor international border control

Principal control measures against HPAI

- When there is confirmation of outbreaks of HPAI
  - Stamping out
  - Movement Control : Suspension of export
  - Surveillance: Monitoring, testing, quarantine
  - Other measures: Disinfection etc.
  - Immediate notification to OIE

HPAI Control with vaccination in Hong Kong

Elaine Lee
Veterinary Officer/Avian Influenza
Agriculture, Fisheries and Conservation Department

Vaccination Programme I

- Universal vaccination of chickens
- Used commercial killed H5N2 oil emulsion vaccine (A/CK/Mexico/232/94)
- Commenced in June 2003
- Broilers receive 2 injections at 8-10 days and 38-40 days of age; breeder birds also booster injections at 12 and 18 weeks and then 6 monthly
- Vaccine paid by farmers

Overview of recent HPAI outbreaks

- 30 licensed chicken farms with a capacity of 4 million
- Slow-growing ‘Shek-kee’ "yellow chickens" (market age 70-100 days old)
- One farm outbreak in 2008

Detection of H5N1 HPAI in domestic poultry **(2005-Aug 2011)**

Case Number	Species (Common name)	Location	Clade
SV-08-1369.13	Chicken	Po On Road Market (Retail market)	2.3.4
SV-08-1421	Chicken	Luen Wo Hui Market (Retail market)	2.3.4
SV-08-1441	Chicken	Yan Oi Market (Retail market)	2.3.4
SV-08-1456	Chicken	Ap Lei Chau Market (Retail market)	2.3.4
SV-08-3136.1-2	Chicken	Yuen Long (Farm)	2.3.4
D-08-8825-1	Chicken		2.3.4
D-08-8825-2	Chicken		2.3.4
D-08-8825-3	Chicken		2.3.4

Efficacy of vaccine

- 2008 farm outbreak case: antigenic variant
- Engaged institutions to conduct vaccine challenge studies to examine the efficacy of AI vaccines including Intervet Nobilis H5N2 vaccine and Harbin Re-5 H5N1 vaccine
  - Harbin Re-5 H5N1 vaccine : all imported chickens from Mainland since 2008
- A field trial using the Harbin Re-5 H5N1 vaccine in local farms

Vaccination Programme II

- The monitoring of vaccine usage :Farm inspection; industry organization
- Antibody responses are monitored at four weeks after 2nd injection
  - Haemagglutination Inhibition test (HI): greater than 1:16 in more than 70% of tested sample.
  - If poor antibody response levels in a flock a 3rd injection must be given
- Each batch has 60 sentinel chickens
  - Any sick/dead sentinels must be reported and investigated
  - 14 vaccinated and 14 sentinel chickens at day 64 (four weeks after second vaccine dose) tested by HI
  - Within 5 days of sale 14 sentinels tested by HI

Advantages of using vaccine

- The introduction of the mandatory AI vaccination programme for chickens in local farms in 2003, local farmers have been using the Intervet Nobilis H5N2 vaccine. No AI outbreaks occurred on local chicken farms until a single outbreak on December 2008 when AI infection was detected, mainly in unvaccinated sentinel chickens but also in a small number of vaccinated chickens in a farm in Yuen Long.

Active Surveillance Program

- Surveillance along the production and marketing chain

- Prevalent rate is low :One farm outbreak and fecal droppings in four retail poultry markets from 2003-Aug 2011

Vaccination Concerns

- Accelerate antigenic drift and mutation necessitating frequent change of the vaccine
- Continued virus shedding in vaccinated chickens
- Emerging strains escaping detection
- Undermining the push for improved biosecurity

Medium and long term view

- Sending all HPAI isolates to the WHO Reference Laboratory including Hong Kong University and Department of Health for molecular characterization
- Early preparedness, risk communication and tailor-made vaccine
- Vaccination is part of a package of essential control measures including enhanced biosecurity programmes and comprehensive monitoring and surveillance programme

Situation of HPAI on poultry in Indonesia

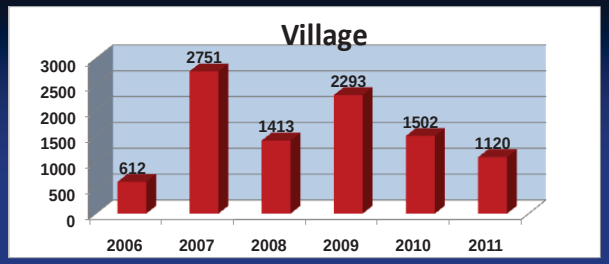
Country Report from Countries where Vaccination is in Practice

INDONESIA

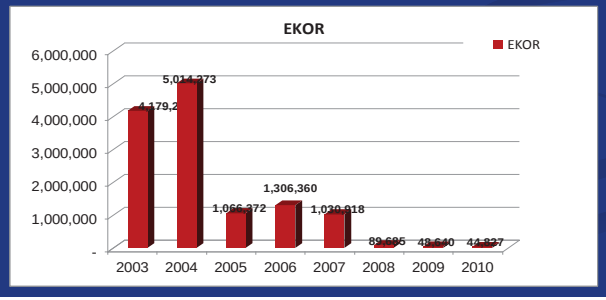
4th OIE Regional Meeting on Strengthening Animal Health Information Networking in Asia Under the Project for Strengthening HPAI Control in Asia

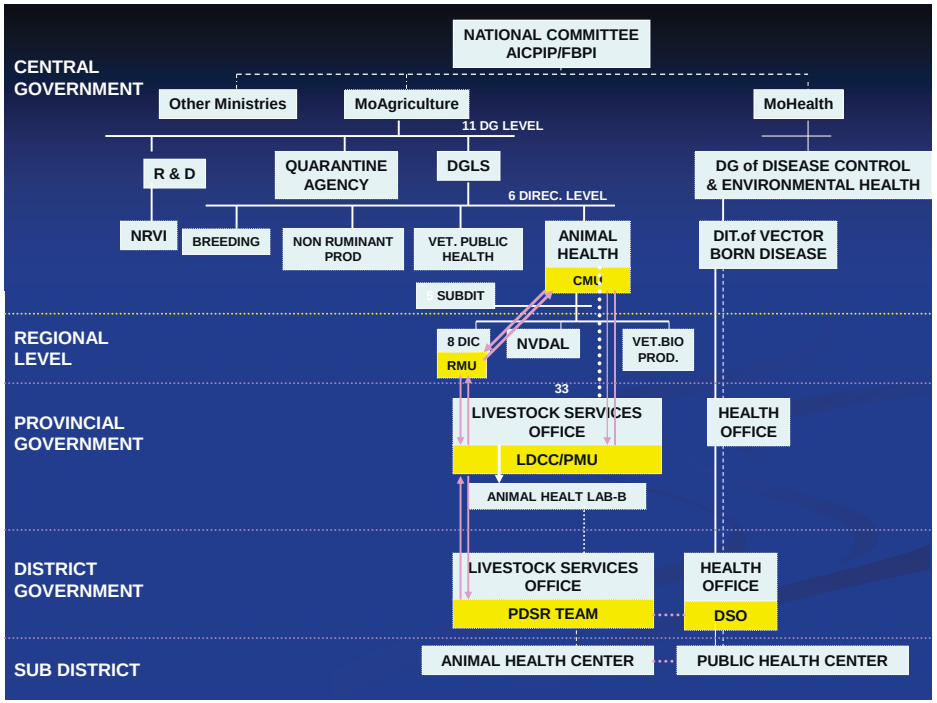
Chiang Mai, 14 – 16 September 2011

Number of Villages Infected AI



Number of Poultry Death caused by HPAI

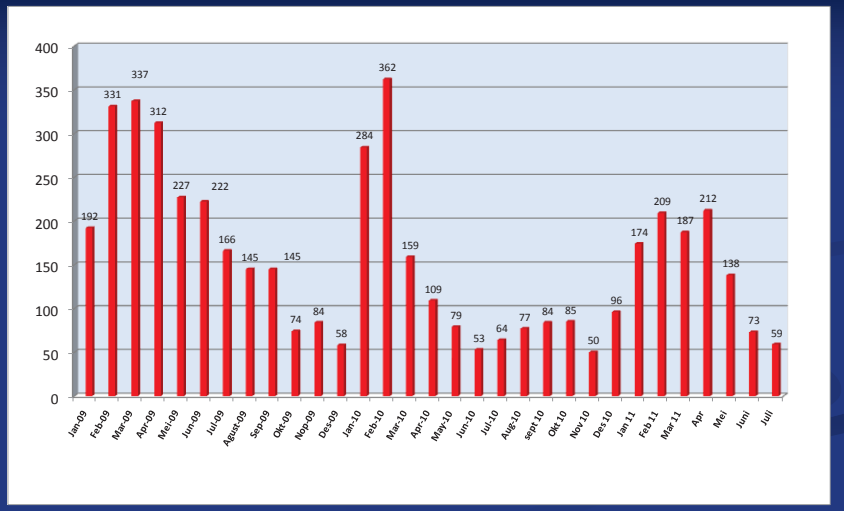




Since 2003 up to June 2010 :

- Infected areas 31/33 prov, 295/498 districts/muns
- Areas in which AI case reported within the last 6 months :
  all provinces in Java, Sumatra, Sulawesi (South, West, Central), Kalimantan (Central, South, East, west)
- Areas with no AI case in the last :
  >6 months - 1 year : Bali, Bengkulu, South-East Sulawesi, Riau Islands, Jakarta
  >1 – 2 years : West Nusa Tenggara
  >2 – 3 years : East Nusa Tenggara
  >3 years : Maluku, North Sulawesi, West Papua, Papua
- Free areas / never reported : Gorontalo, North Maluku

CASES OF AI

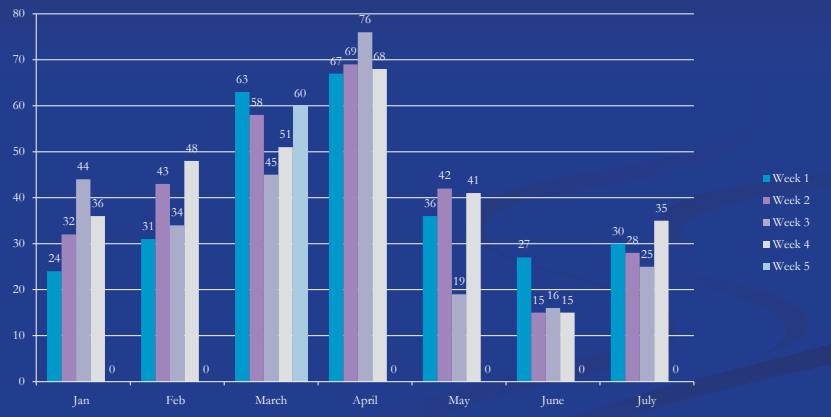


Updated AI Situation in Poultry

1. AI cases in backyard (sector-4) relatively under control by PDSR program, while tend to increase in commercial poultry, esp. in sector 3 → infection to poultry market chain and distribution among areas → not fully effectively under control

2. Virus dynamic
   Antigenic drift in some high risk areas causing existing vaccines un-protective to field virus

Villages with active Cases of HPAI (January-July 2011)

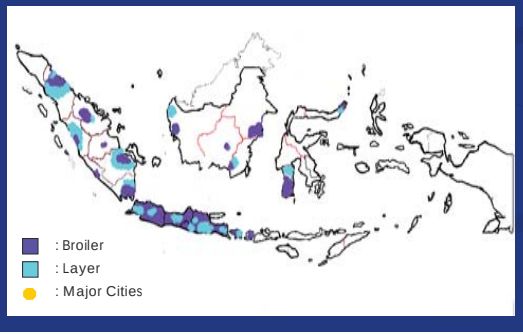


9 Strategies to Control AI

1. **Biosecurity**
2. Depopulation /focal culling in infected area
3. Vaccination
4. Poultry movement control
5. Surveillance
6. Public Awareness
7. Restocking
8. Stamping-out in new outbreak area
9. Monitoring, reporting, dan Evaluation

POPULATION OF POULTRY

Type of birds	Count	Farms
Chicken	1,622,750,000	21,168,488
Duck	45,292,000	-
Quail	6,742,000	-
Pigeon	1,824,500	-
Total	1,631,316,500	21,168,488



Poultry Industry

Strategic Framework for HPAI Control

	Surveillance and investigation	Outbreak control	Prevention
Village-based poultry	Information	Immediate	Long-term
Commercial poultry	Early	Biosecurity and vaccination	Risk
Market system	Action	Reduction	Reduction
Ducks and other waterfowl			

PDSR
Local Govt Sup
OFFLU
NPQIP
Market Surveillance
Market C&D interventions
Market chain Restructuring
Targeted Research
Movement control? Vaccination?

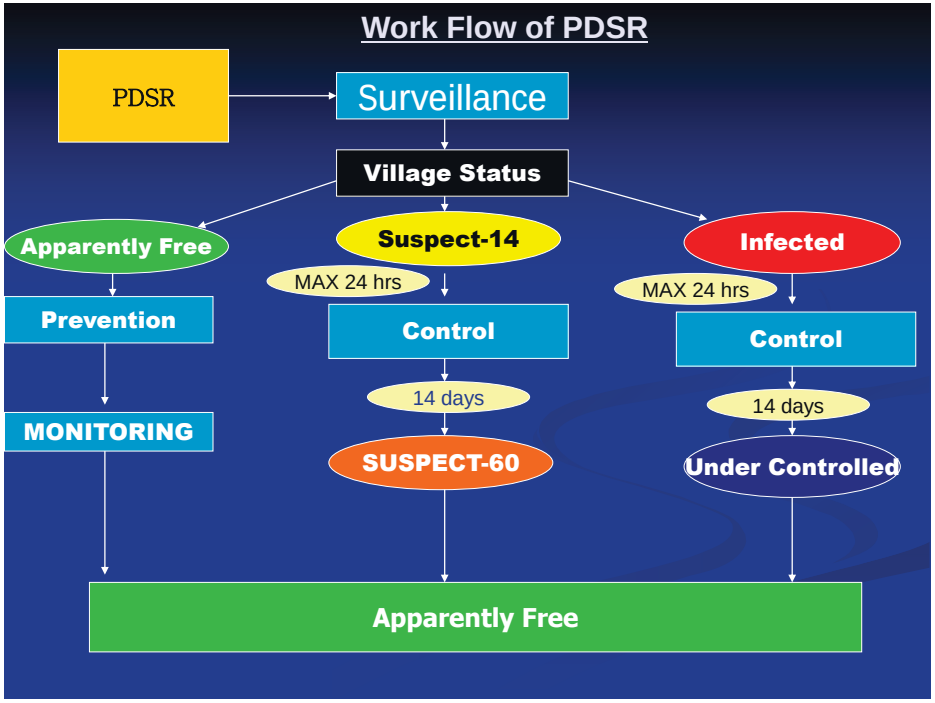
CONTROL MEASURES AGAINST HPAI

PASSIVE SURVEILLANCE

ACTIVE SURVEILLANCE
(Dinas / PDSR)

CASE DEFINITION
- Pathology Anatomy Examination
- Positive Rapid Test

RESPONS
- Disposal
- Disinfection
- Socialization



Surveillance

1. Active Surveillance / structural → DICs.
2. Participatory Surveillance : PDSR team in sector-4 → Challenges : sustainability, funding, for other diseases
3. Surveillance on commercial poultry & border
4. Surveillance on poultry market chain &
5. Surveillance to achieve AI free status
6. Surveillance : prevalence
7. Integrated Surveillance (PDSR-DSO)

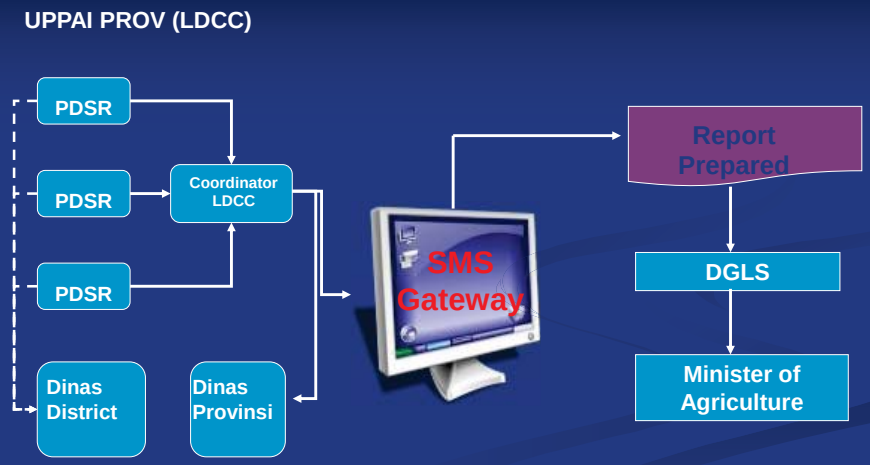
Refocusing on HPAI Control Strategies in Poultry, NSWP 2009-2011

- **High Risk Area**
  - Western Java (West Java, DKI Jakarta, Banten)
  - East Java, Central Java, DIY, Lampung, North Sumatra, South Sulawesi
- **Medium Risk Area**
  - Sumatra (Except North Sumatra, Lampung),
  - Sulawesi (West, Central, North-East)
- **Low Risk Area**

  Kalimantan, North Sulawesi, Nusa Tenggara (East, West) Maluku, Papua, Papua Barat, Gorontalo, North Maluku
- **Specific Protection Area**: Bali

→ Based on disease situation, risk level of virus transmission, control strategies.

SMS GATEWAY FLOW



Plan to achieve AI Free Status

1. Low risk area
   - West Kalimantan : Free from AI, declaration Jan. 2010
   - Maluku, Papua, West Papua, East & West Nusa Tenggara : 2011
   - South, Central, East Kalimantan : up to 2012
2. Special protection area Bali : 2013
3. Medium risk area
   - Sulawesi (except South Sulawesi) : 2014
   - Sumatra (Babel, Riau islands) : 2014
   - Other parts Sumatra (except Lampung, North Sumatera) : 2016
4. High risk area : decreasing of cases & virus circulation intensively & gradually → 2020 ?

Vaccination Efforts

- **OFFLU Project**
  - Virus dynamics: identification of antigenic drift, resulting in existing vaccines not being protective against some field viruses, in particular for commercial chickens
  - Based on genetic characterization and antigenic cartography of circulating strains, OFFLU and the DAH Animal Health Experts Panel recommended that 4 isolates be determined as master seeds for poultry vaccine production and 2 isolates for challenge testing
  - SEPRL (USDA laboratory) in Georgia, USA has prepared a Reverse Genetics/RG vaccine construct using the selected isolates
  - Vaccine, using the new master seed is expected to be produced in Indonesia in 2010
  - Technology transfer: bio-informatics (Indonesian Research Centre for Veterinary Science (IRCVS/BBalitvet), Disease Investigation Centres/DICs, Universities, Poultry Commercial labs; antigenic cartography (DICs)
  - Centre of Excellence: IRCVS/BBalitvet for Genetic Characterization, DIC Wates for Antigenic Cartography

Laboratory/ Diagnostic Capability

- Collaboration with AAHL, Geelong and OFFLU project to:
  - improve capacity & capability at 8 regional diagnostic laboratories & research laboratory to support serological, molecular and virology testing as well as antigenic cartography
  - Improve biosafety & biosecurity in diagnose AI
  - Develop training programs for continuing lab. work
  - Evaluation of standardization lab. methods

Vaccine Policy and Vaccination Strategy

Circular Letter DG of LS, 30 September 2009

1. New vaccine with selected isolate, produced in 2010. Before new vaccine established, registered vaccine with local isolates can be used
2. Targeted vaccination strategy (instead of mass vaccination) according to technical requirements
3. High risk area or high risk commercial farm with planning for exit strategy. No vaccination in low risk area
4. Sectors 1,2 and 3 medium-scale → self sufficient. Sector 3 small-scale and intensive backyard → government

International Program/Projects

- Collaborating agencies and objectives
  - FAO, JICA, World Bank, ACIAR, KfW, CSIRO/AusAID, USAID, USDA, BEP, OIE, IDP, CBAIC
  - To support HPAI control programme in Indonesia through technical assistance, capacity building, provision of reagents & equipment, applied studies/research, field operational

Laboratory/Diagnostic Capability

ADB

Laboratory/ Diagnostic Capability

- ***INITIATIVES/ PROGRAMMES*** :
  - Strengthening Veterinary laboratory in support of serological, molecular and virological testing.
- ***MAJOR LESSONS LEARNT*** :
  - Biosafety in handling specimen to be tested; proper and advance diagnostic techniques
- ***CONSTRAINTS :***
  - Standardization of most reagent used in the vet laboratory
  - Internal Quality Control data has to be implemented effectively in every lab.
  - Provider for Proficiency test conducted within laboratory in Indonesia
- ***FUTURE ACTIONS :***
  - Develop training programs for continuing lab. work
  - Standard for diagnostic methods and biosafety protocols, and Good Laboratory Practice (GLP) in every laboratory
  - Evaluation of standardization lab. methods
  - Applied Research to assess gov. policy

International (cont)

- FAO (donor support from USAID & AusAID) :
  - Market chain, market retructuring, PDSR, biosecurity & education at village level, biosecurity at commercial poultry farm, vaccine & vaccination strategy
- Indonesia Dutch Partnership (IDP) Programme on HPAI Control (the Netherlands
  - Capacity development at central & regional levels, applied studies and research, development of diagnostic capacity and reagents production
- JICA
  - Support of infrastructure enhancement for AI diagnosis at few diagnostic laboratories and establish new diagnostic lab in Java
- Australia/Indonesia Veterinary Laboratory Capacity Building Project (CSIRO)
  - Improve diagnostic capacity & capability, and provision of reagents & small equipment; quality assurance and laboratory network program

Culling and Compensation

- Focal Culling and disposal in sector 4 by PDSR team, in commercial poultry by private
- Compensation
  - Sector 4 by Gov. Funding → financial mechanism
  - Commercial poultry (sector 3) → PPP (on plan)

Challenges

- Decentralization/autonomy era → AI control program not priority
- Strengthen veterinary services, limited budget & veterinary human resources
- Poultry movement control
- Encouraging poultry industry involvement in implementing biosecurity and case reporting
- Integrating the viral dynamics knowledge derived from animal and human sources in order to better understand H5N1 epidemiology
- Achieving Indonesian HPAI Free status

International…(cont)

- World Bank
  - Provision of operational support to LDCC in Kalimantan & Sulawesi, community-based preventive vaccination, pilot operational research
- Kfw
  - Support of infrastructure establishment (BSL-3 facility) at National Veterinary Drug Assay Laboratory (incl. equipment and training); upgrade of BSL-2 facility onto BSL-2+ in one DIC; provision of laboratory equipment for the existing laboratory facilities
- OIE
  - Donation one mobile laboratory to enhance AI diagnosis in the field
- BEP
  - Provision of reagents and small-scale lab equipment

THANK YOU

International…(cont)

- ACIAR
  - Pilot biosecurity for small-scale sector 3 in West Java, South Sulawesi & Bali; risk assessment to identify the highest risk movements, and estimation of risk reduction & economic benefit in eastern part of Indonesia
- USAID
  - Capacity building through postgraduate scholarship for Master program in-country and overseas for veterinary & public health epidemiology
- USDA
  - Biosecurity & postgraduate scholarship for Master program in-country
- CBAIC
  - Public awareness

HPAI Control and Prevention without vaccination in Japan

Japan

Kazutoshi MATSUO, DVM MPVM PhD

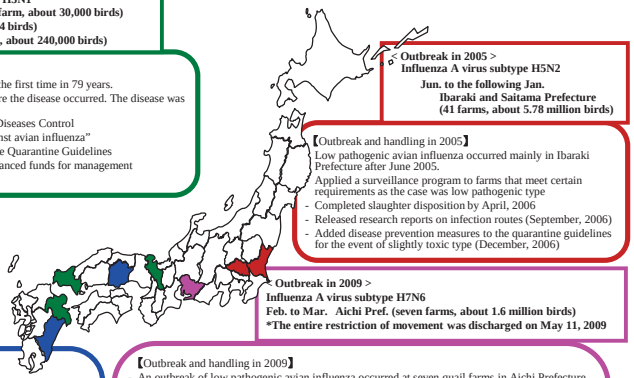
Animal Health Division

Ministry of Agriculture, Forestry and Fisheries

1-1 Overview of the recent HPAI outbreaks in Japan (2004-2009)

Year	HPAI /LPAI	Type	Birds	Incidences
2004 Jan-mar	HPAI	H5N1	Chicken	4 farms in 3 prefectures Approx. 410,000 birds culled
2005 June - 2006 Jan	LPAI	H5N2	Chicken	41 farms in 2 prefectures Approx. 5.78mil birds culled
2007 Jan-Feb	HPAI	H5N1	Chicken	4 farms in 2 prefectures Approx. 170,000 birds culled
2009 Feb-Mar	LPAI	H7N6	Japanese Quail	7 farms in a prefecture Approx. 1.6mil birds culled
2010 Nov. -2011 Mar	HPAI	H5N1	Chicken	24 farms in 9 prefectures Approx. 1.85 mil birds culled

1-2 Overview of the recent HPAI outbreaks in Japan (2004-2009)



<Outbreak in 2004> Influenza A virus subtype H5N1
Jan. Yamaguchi Prefecture (1 farm, about 30,000 birds)
Feb. Oita Prefecture (1 farm, 14 birds)
Feb. and Mar. Kyoto Prefecture (2 farms, about 240,000 birds)

【Outbreak and handling in 2004】
- Highly pathogenic avian influenza occurred in 2004 for the first time in 79 years.
- Conducted measures for spread prevention at farms where the disease occurred. The disease was terminated in April.
- Amendment of the Act on Domestic Animal Infectious Diseases Control
- Summarized "Emergency comprehensive measures against avian influenza"
- Established Specific Domestic Animal Infectious Disease Quarantine Guidelines
- Established complementary funds for animal health; advanced funds for management
- Stocked the vaccine for emergency

< Outbreak in 2005 >
Influenza A virus subtype H5N2
Jun. to the following Jan.
Ibaraki and Saitama Prefecture
(41 farms, about 5.78 million birds)

【Outbreak and handling in 2005】
Low pathogenic avian influenza occurred mainly in Ibaraki Prefecture after June 2005.
Applied a surveillance program to farms that meet certain requirements as the case was low pathogenic type
- Completed slaughter disposition by April, 2006
- Released research reports on infection routes (September, 2006)
- Added disease prevention measures to the quarantine guidelines for the event of slightly toxic type (December, 2006)

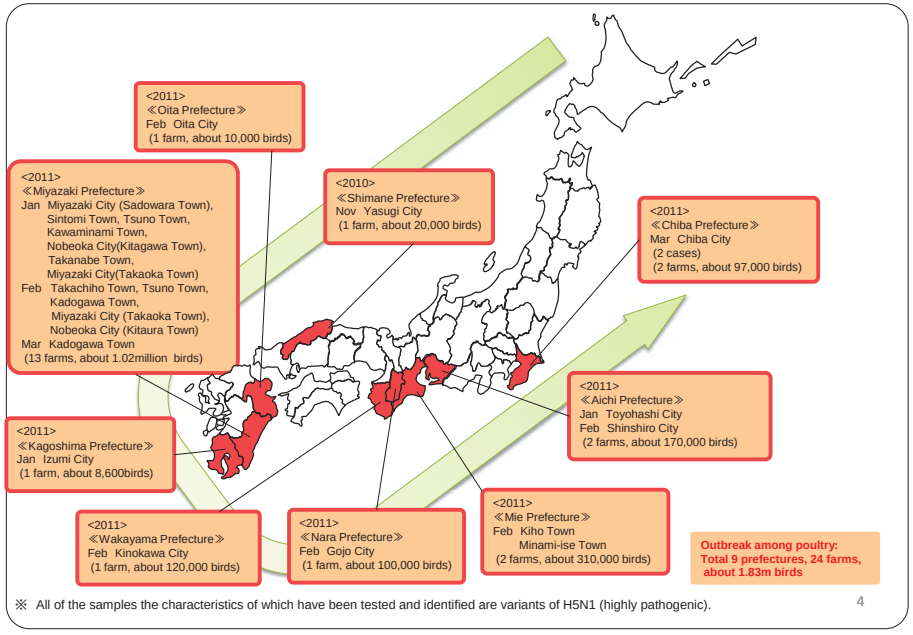
< Outbreak in 2007 >
Influenza A virus subtype H5N1
Jan. Miyazaki Prefecture (2 farms about 70,000 birds)
Jan. Okayama prefecture (1 farm about 10,000 birds)
Feb. Miyazaki prefecture (1 farm about 90,000 birds)

【Outbreak and handling in 2007】
- Highly pathogenic avian influenza occurred in Miyazaki and Okayama Prefecture in January and February, 2007.
- The disease was terminated early by taking immediate disease prevention measures based on the quarantine guidelines (the restriction of moving animals was lifted on March 1st, 2007).
- Conducted emergency disinfection using slaked lime at poultry breeding farms
- Provided accurate information to the public (including correction of inadequate indications)
- Released research reports on infection routes (September, 2007)
- Modified the quarantine guidelines (announcement upon suspicious cases, exceptional measures for poultry meat processing plants, etc) (February, 2008)
- On-site inspection at poultry farms; preparation and distribution of hygiene management textbook
- Enhanced the monitoring, and notified to ensure early detection and notification

< Outbreak in 2009 >
Influenza A virus subtype H7N6
Feb. to Mar. Aichi Pref. (seven farms, about 1.6 million birds)
*The entire restriction of movement was discharged on May 11, 2009

【Outbreak and handling in 2009】
- An outbreak of low pathogenic avian influenza occurred at seven quail farms in Aichi Prefecture in February, 2009.
- Right after confirmation of the outbreak, it was restricted to move poultry beyond 10 km in radius. The isolated virus from the birds of three farms was confirmed as low pathogenic. The restriction area was reduced to 5 km in radius for the poultry of these three farms.
- In other four farms, only anti H7 HA antibody was observed (virus was not isolated). Only quails were restricted to move beyond 5 km in radius. (Examinations were carried out to confirm that the birds are pathogen-free in all poultry farms within 5 km in radius.)
- On-site inspections were conducted at all quail farms all over Japan, confirming negative result.
- An epidemiological study team was set up for infection route elucidation.
- Various supports have been provided to the owners of affected birds to resume farm management and to take measures against spread of the disease through the grant for food safety, and ad hoc project for scarce breeding resource propagation and recovery, as well as the allowance of control of domestic animal infectious disease. Quails were added to the list of domestic animals for complementary funds for animal health in 2009.
- Released epidemiological research reports (Feb.2010)

1-3 Overview of the recent HPAI outbreaks in Japan (2010-2011)



※ All of the samples the characteristics of which have been tested and identified are variants of H5N1 (highly pathogenic).

4-1 Principal control/preventive measures against HPAI

Basic Policies for HPAI (stipulated in the disease specific manual for HPAI)

- Prevention of the introduction of HPAI virus
  - Animal quarantine
- Early detection
  - Surveillance (Active, Passive)
  - Notification of abnormal poultry to official veterinary services
- Rapid Containment with stamping out
  - Culling, disinfection, movement restriction with monitoring etc.

Ref) movement restriction

- **Target: poultry (live or dead), droppings, feed, equipment or others which could spread virus**
- **Area: basically10km radius around infected farms (can be extended to 30km or reduced to 5km radius)**
- **Duration: 21 days after completion of culling and disinfection**
- **Monitoring: all the poultry farms within the area be inspected at least twice during the restriction period**
- **Test method: 10 birds/farm should be sampled and tested with screening test (AGP, HI) and confirmatory test (virus isolation). Birds with any clinical signs compatible with HPAI should also be tested.**

2 Overview of the poultry industry in Japan

1. Populations of poultry and others

(unit: birds)

Broiler[1]	Layer[2]	Breeder[3]	Gamebirds etc[3]					
			Ostrich	Duck[4]	Turkey	Japanese quail	Goose	Guinea fowl	Pheasant
107mil	181mil	18.4mil	3,100	213,000	1,200	5.2mil	218	11,100	54,800

1 As of Feb. 1st, 2009
2 As of Feb. 1st, 2009. Including parent stocks and chicks. Excluding layers at farms with less than 1,000 hens
3 As of Feb. 1st, 2010
4 Including domestic ducks and crosses between wilds and domestic ducks

2. Slaughtered birds for meat per year

Slaughtered birds for meat /year*
721 millions

* FY 2009 (2009.Apr to 2010 Mar)

- There is **no live bird markets** and **few holdings of backyard production** in Japan

3. Numbers of poultry by farm size

(unit: birds)

Farm size by number of shipped birds/year[1]			
< 50,000	50,000 - 99,999	100,000 -299,999	≥ 300,000
15mil	38mil	252mil	325mil

(unit: birds)

Farm size by number of raised [2]				
1,000 -4,999	5,000 - 9,999	10,000 -49,999	50,000 - 99,999	≥100,000
1.7mil	3.2mil	24.1mil	19.5mil	91mil

1 As of Feb. 1st, 2009
2 As of Feb. 1st, 2009. Excluding farms with less than 1,000hens and breeder farms

4-2 Principal control/preventive measures against HPAI in Japan

Monitoring System of High Pathogenic Avian Influenza

Stationary Monitoring

Purpose :Early detection and early notification
Object :**3 farms** per livestock hygiene service center
Frequency :**Once a month**
Content :Identifying clinical signs, virus isolation and antibody test from more than 10 birds per farm

Enhanced Monitoring

Purpose :Early detection and early notification including LPAI
Object :**Statistically random sampling from poultry farms which keep more than 100 birds (Up to 29 farms per prefecture)**
Frequency :**Once an year**
Content :Identifying clinical signs, antibody test from more than 10 birds per farm

Requesting Reports

Purpose :Early detection and early notification
Object :Poultry farms which keep **more than 100 birds**
Frequency :**Once a month (in winter season)**
Content :Reporting the number of dead birds in the farm per week

3 Position/Policy of Japan's HPAI control measures

When to consider usage of HPAI emergency vaccine (stipulated in the disease specific manual for HPAI)

"Do not use vaccines for preventing the outbreak. However, when it is considered that it would be **difficult to stamp out** all of the animals in affected farms **quickly** because successive HPAI outbreaks have occurred in several farms in one movment restriction area."

Usage of HPAI vaccines

- Anti-HPAI vaccine can mitigate development of clinical signs of AI, however cannot completely protect HPAI infection.
- Usage of Prophylaxis vaccine could introduce:
  - ☐ retard of rapid detection of AI
  - ☐ chances of time to spread of HPAI virus into broader areas
  - ☐ risk of HPAI endemic and virus mutation being resistant to vaccine

7 Medium and Long term view to control/eradication of HPAI

Medium term view: Redevelopment of crisis management system, prevention of disease outbreaks and spreading through reviewing related disease control measures* accompanied by the amendment of the Act on Domestic Animal Infectious Disease Control and publicize those revised measures.

*) e.g. Revisions of "Biosecurity Standards" and "the Guideline for Control of HPAI"

Long term view: Reviewing the Medium term view and disease control supported by international cooperation in Asian regions

5 Advantage of Japan's HPAI control measures without vaccine

Without usage of prophylaxis vaccine

- Ensure early detection of affected/suspected birds
- Ensure rapid containment
- prevent risk of virus circulation
- prevent risk of virus mutation

usage of HPAI vaccines

- Anti-HPAI vaccine can mitigate development of clinical signs of AI, however cannot completely protect HPAI infection.
- Usage of Prophylaxis vaccine could introduce:
  - ☐ retard of rapid detection of AI
  - ☐ chances of time to spread of HPAI virus into broader areas
  - ☐ risk of HPAI endemic and virus mutation being resistant to vaccine

6 Challenges of HPAI control measures

Amendment of the Act on Domestic Animal Infections Disease Control

- **Japan amended "the Act on Domestic Animal Infectious Disease Control" on April 4th, 2011** based on experiences from cases of FMD in Miyazaki 2011 and AI in 2010 & 2011.
- The Act enforces disease controls with the emphasis on **"Prevention of outbreak", "Early detection and notification"** and **"Smooth implementation of initial containment program"etc**.

Prevention of outbreak

- Empowerment of authorities for examinations and disinfection of tourist belongings at sea/airport
- Livestock owners have to install disinfection instruments and disinfect persons who enters into their farms.
- Livestock owners have to notify animal health/sanitary situations to their local governors.

Early detection and notification

- Persons relevant to livestock have to notify animals with clinical signs described by the Minister of MAFF.

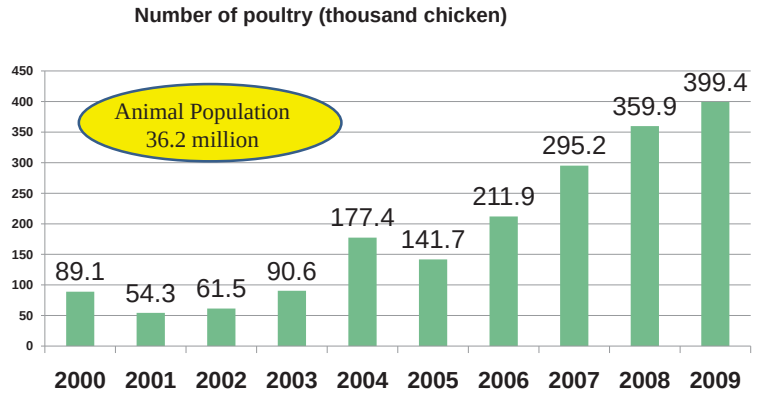
Smooth implementation of initial containment program

- When an outbreak, livestock owners have to install disinfection instruments for disinfection of persons who comes out of the farms.
- When an outbreak, empowered authority to mandately disinfections for cars/persons who pass the disinfection points

Reinforcement of finantial support

- Compensation rate increased from 80% to 100%
- Livestock owners who is responsible for failing control of disease have to return compensations (a part / all) .

POULTRY POPULATION IN MONGOLIA



No HPAI disease is registered in domestic fowl.

4rd OIE Regional Meeting
on Strengthening Animal Health Information Networking in Asia
Chang-Mai, Thailand 14-16 September 2011

MONGOLIA

Current situation of avian influenza in Mongolia

B.Bayartungalag
Deparment of veterinary and animal breeding
MINISTRY OF FOOD. AGRICULTURE AND LIGTH INDUSTRY
MONGOLIA

POULTRY SECTOR IN MONGOLIA

- Commercial poultry farm
  - Only egg production
  - Located near capital
  - 18 farms-320,000 layers
  - 6,000-80,000 per farm
  - Indoor management

CONTENTS

RECENT HPAI OUTBREAK IN MONGOLIA (2005-2010)

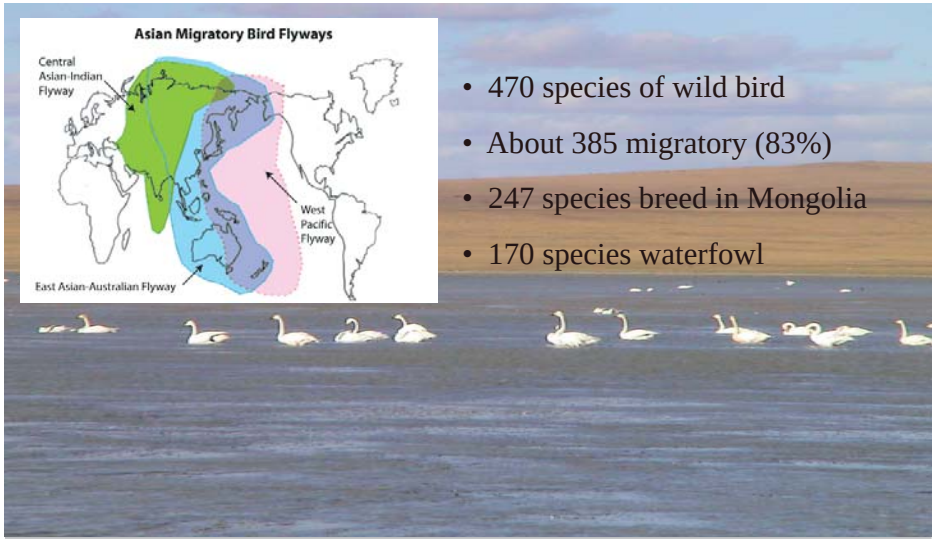
Date	Place	Lake	Birds	Type of virus
7/29/2005	Khuvsugul	Erkhel	Whooper swan, BHGoose	HPAIV-H5N1
8/5/2005	Bulgan	Khunt	Whooper swan	HPAIV-H5N1
5/6/2006	Bulgan	Khunt	Whooper swan	HPAIV-H5N1
5/6/2006	Khuvsugul	Erkhel	Common goldeneye	HPAIV-H5N1
8/5/2009	Arkhangai	Duruu	BHG, Common goldeneye, Ruddy shelduck	HPAIV-H5N1
5/10/2009	Arkhangai	Doit	Whooper swan	HPAIV-H5N1
5/12/2010	Sukhbaatar	Ganga	Whooper swan	HPAIV-H5N1
4/8/2011	Sukhbaatar	Zegst	Whooper swan	H5 /suspected case/

POULTRY SECTOR IN MONGOLIA

Backyard chicken flocks sparsely distributed over country, no accurate data
Some home-bred, some bought as pullets from commercial flocks

HPAI H5N1 CLINICAL SIGN (2005-2010)

MIGRATORY BIRDS



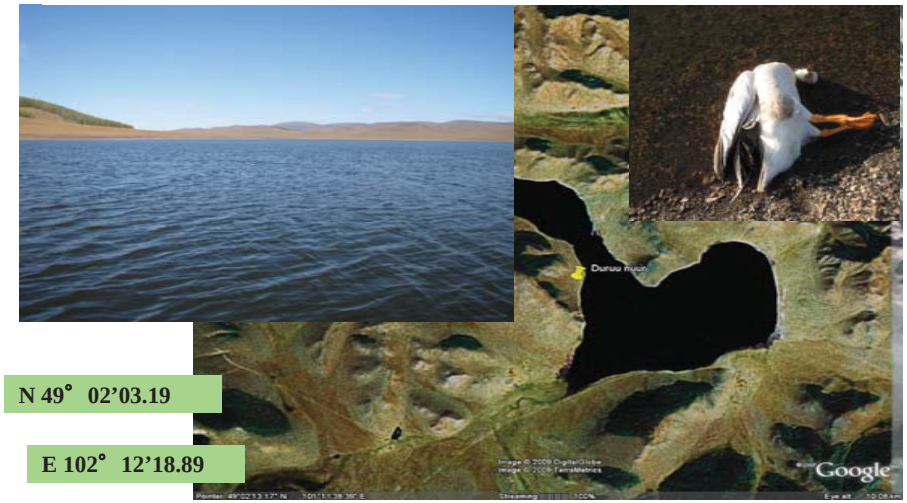
- 470 species of wild bird
- About 385 migratory (83%)
- 247 species breed in Mongolia
- 170 species waterfowl

CAPACITIES OF DIAGNOSTIC LABORATORY

DIAGNOSTIC KITS AND REAGENTS

Diagnostic kits	Supplied
Virus isolation	9-11 old days chicken embryonated eggs
	MDCK cells
Rapid test	-Symbiotics, USA
	-Anigen, Korea
Antigen and antiserum for HI, NI test	-HVRI, China
	-IZP, Italy
	-NVSL, USA
RT-PCR	-A, H5, H7, H9 kits, Anigen, Korea
	-H1-H15 primers, Invitrogen, USA
	-One-Step PCR kir, Bionote, Korea
Real-Time PCR	-Real-Time PCR kit, Takara, Japan
	- A, H5 real-Time PCR kit, Bionote, Korea
ELISA kit	-AIV Ab ELISA kit, Anigen, Koea
RNA extraction kit	Qiagen, Germany
	Anigen, Korea
	Bioneer, Korea

LOCATION OF LAKE WHERE SICK GOOSE FOUND

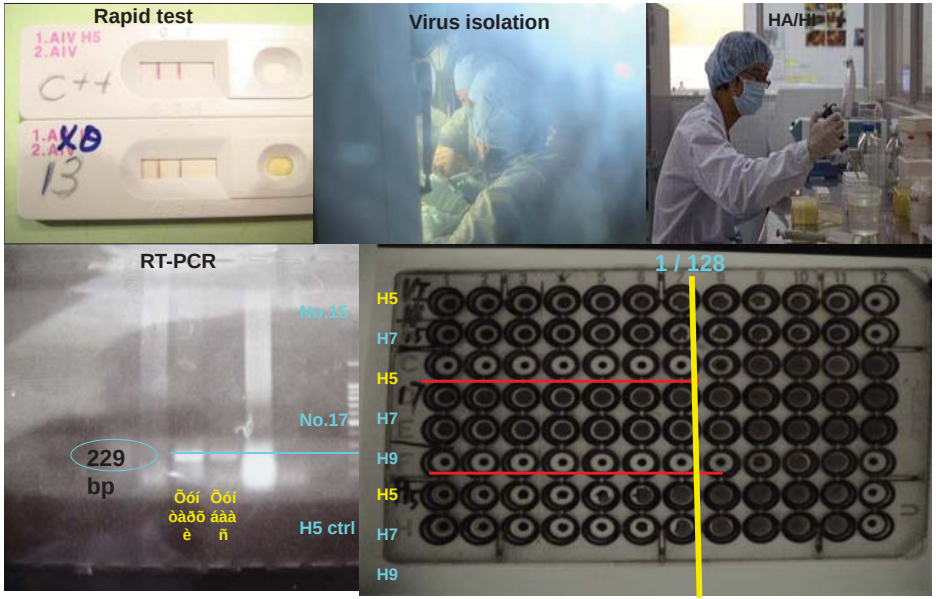


N 49° 02’03.19

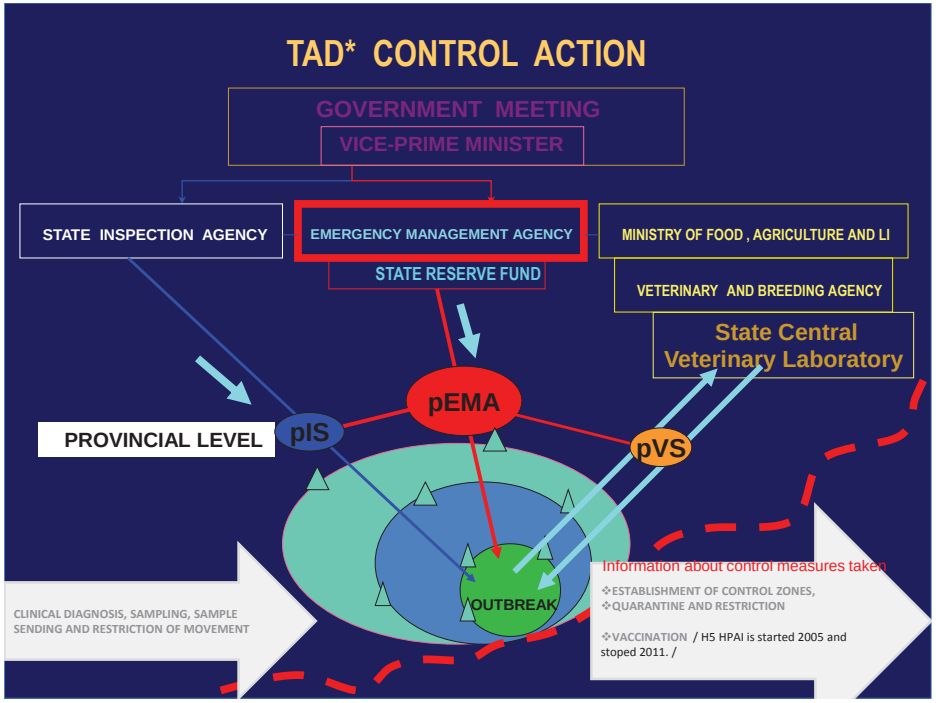
E 102° 12’18.89

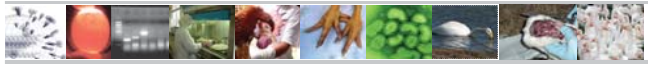
Arkhangai , Tsetserleg, Doroo lake in 2009

DIAGNOSIS IN CENTRAL VETERINARY LABORATORY

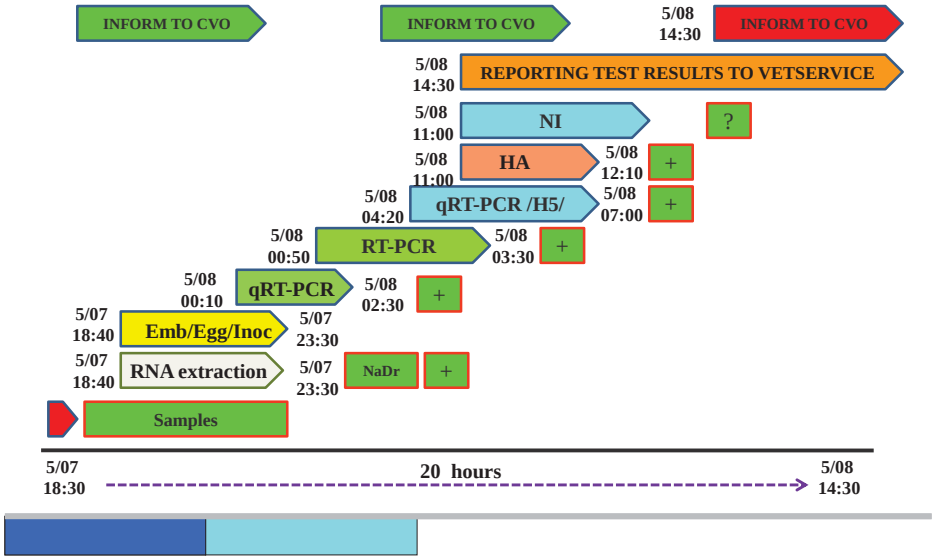


CAPACITIES OF DIAGNOSTIC LABORATORY





LABORATORY DIAGNOSTIC PROCEDURE



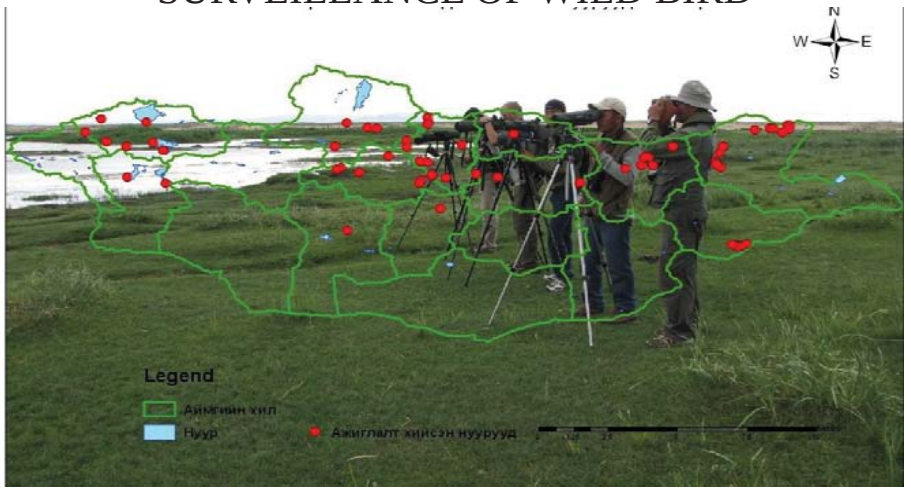
The National Strategy on Avian and Human Pandemic Influenza Prevention is approved by Decree #110 of the Government of Mongolia on May 17, 2006. The strategy consists of nine chapters that include introduction, justification for developing AI prevention strategy, the goal and specific objectives, indicative activities for implementation, management and organizational structure, implementation period, strategy financing, expected results and monitoring and evaluation. The decree requires the Ministers of Health, Food and Agriculture and Emergency Management to plan implementation activities annually and put the financial sources necessary for implementation into state and local budgets starting from 2007

CONFIRMATION OF OIE REFERENCE LABORATORY

	Sapmple		Ab detection test		Virus isolation		Subtyping		Будэг	IPIV test
			NP	H5	1st	2nd	HI	NI		
#1	Whooper swan -1	A/Ws/Mon/1/2010	+++	++	512HA		H5	N1	(Clade 2.3.2)	3.00 (HPAIV)
#2		A/Ws/Mon/2/2010	+++	++	512HA					
#3	Whooper swan -1	A/Ws/Mon/7/2010	+++	++	256HA		H5	N1		
#4		A/Ws/Mon/8/2010	+	-	256HA					
#5	Whooper swan -1	A/Ws/Mon/11/2010	+++	++	256HA		H5	N1		
#6		A/Ws/Mon/12/2010	+++	++	256HA					
#7	Whooper swan -1	A/Ws/Mon/21/2010	+++	++	256HA		H5	N1		
#8		A/Ws/Mon/22/2010	+++	++	256HA					
#9	Gadwall	A/Gadwall/Mon/26/2010	-	-	<2	<2				
#10		A/Gadwall/Mon/27/2010	-	-	<2	<2				

Each HPAI H5N1 suspected samples sent to the OIE Reference laboratory (Hokkaido Unversity, Japan) for confirmation and phylogenetic analyses.

SURVEILLANCE OF WILD BIRD

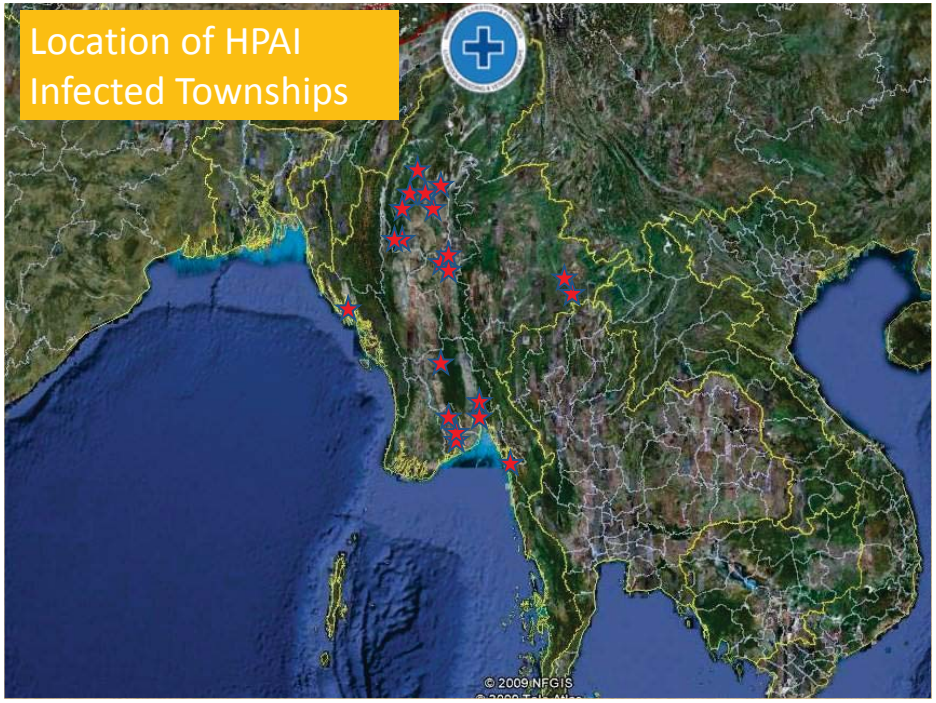


The monitoring of bird influenza survey of ecological observations, their migration, population estimate and species registration was studied during the field trips in 2009 and 2010 respectively 79 lakes and 86 lakes which included total 12 provinces (aimags) of the western, center and southern part of Mongolia.

Avian influenza surveillance in domestic birds

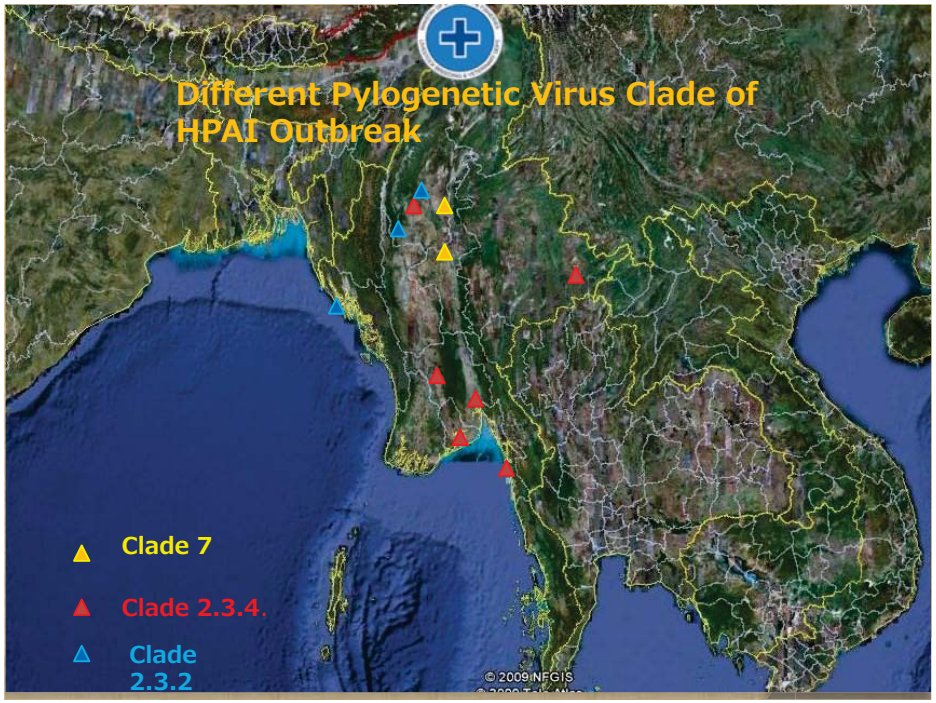
In 2010 There are samples collected in 3 times, includes 480 cloacal swabs and 900 blood serum from Ulaanbaatar capital city and provinces such as Uvs, Bulgan, Orhon, Darhan, Dornod:

- **NA of influenza wasn't detected by RT-PCR for samples of cloacal swabs.**
- **Immune-response appeared 80% at small entities by result of 2 types PCR and** Hemagglutinin-**inhibition tests, which view a good result of vaccination for there.**

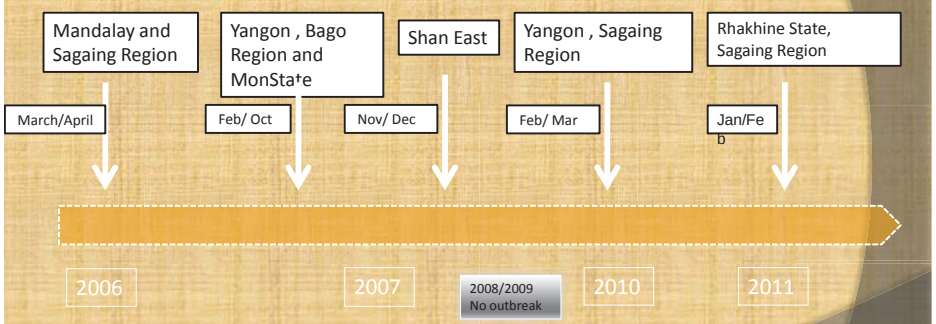


CURRENT HPAI SITUATION AND SUCCESSFUL DISEASE CONTROL WITHOUT VACCINE IN MYANMAR

Dr. Khin Maung Maung, Director
Border Area Development & Inspection Division
Livestock Breeding and Veterinary Department



Occurrence of HPAI in Myanmar



5 Major Wave Of HPAI

Surveillance Activities

Surveillance around the outbreak area at the time of the outbreak
"Peri-outbreak"

Surveillance in previous outbreak area **"Post-outbreak"**

High Risk area Surveillance

Surveillance in no outbreak area **"No outbreak"**

Surveillance in no outbreak area **"No outbreak"**

Clinical Surveillance on both chicken and water fowl
Serological surveillance in Waterfowl

Poultry population 168.05 million (2010-2011)

Commercial	16%
Layer	10.4%
Broiler	5.7%
Local	83.9%

Total Poultry Population (2010-2011)

Chicken	- 153
Duck	- 13.9
Quail	- 0.05
Muscovy & Goose	- 01.1

High Risk Area for Avian Influenza

- Poultry populated area
- Duck raising area
- Wet market/ live bird market
- Wetland and neighbouring area
- Previous infected area
- Border area
- Poultry, poultry products movement route

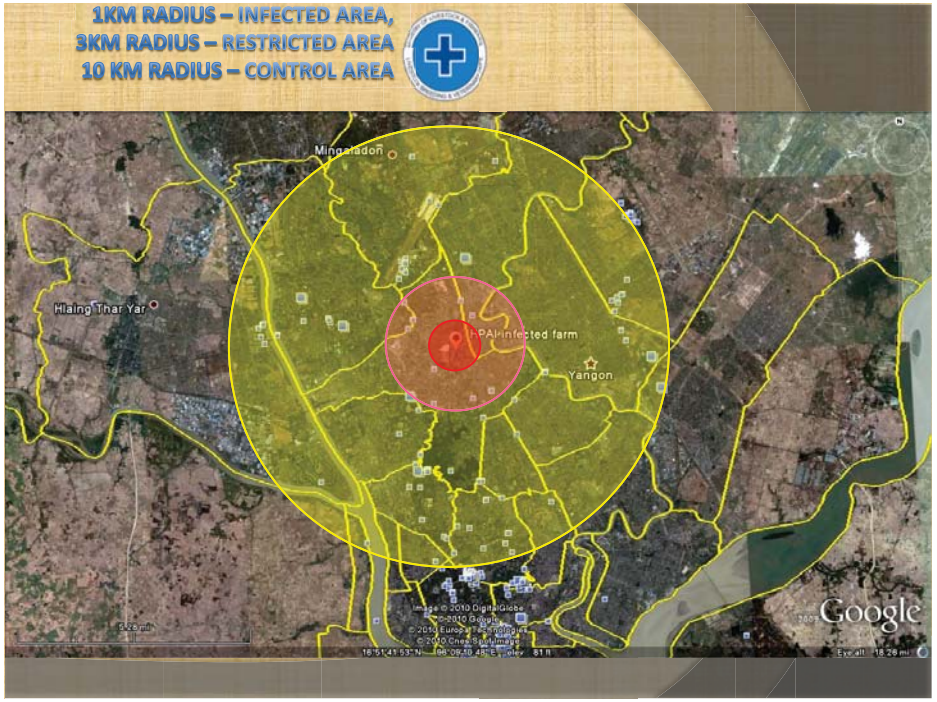
Control Procedures

- ***Stamping Out (Humane Culling, Cleaning and Disinfection, Buried) in infected area***
- ***Movement Restriction in Control Area***
- ***Intensive Clinical Surveillance in Restricted Area***
- ***Public Awareness***

Why Successful Outbreak Control

- Early reporting – Public Awareness
- Rapid Response – Movement restriction
  Humane culling
  Proper buried
  Cleaning and Disinfection

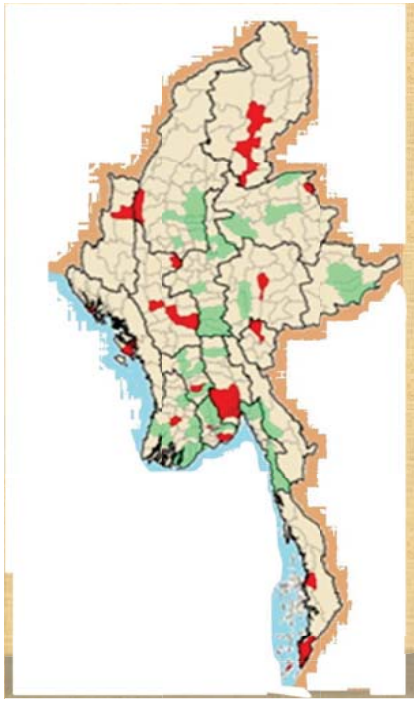
Good Collaboration all departmental personals and NGOs



- (a) Vaccination in some neighboring countries
- (b) Difficult to different iate vaccinated animals and non-vaccinated animals
- (c) Misunderstanding between vaccination and non-vaccination
- (d) Worry for illegal importation and vaccination in some farms

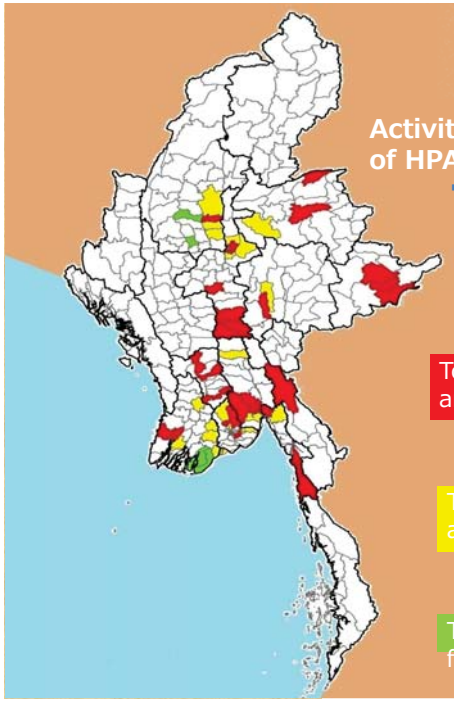
Active Surveillance Program

- -Human culling
- -Proper burried or culled chicken
- -Disinfection of backyard poultry farm
- Public awareness



Activities for Prevention and Control of HPAI (2010 - 2011)

- H5N1 Serum Cohort, Clinical Cohort, Poultry Diseases Surveillance and Outbreak Investigation **(78 townships)**
- **50 townships** conduct serum cohort, clinical cohort, poultry disease surveillance and outbreak investigation
- **28 townships** conduct poultry disease surveillance and outbreak investigation



Activities for Prevention and Control of HPAI (2009)

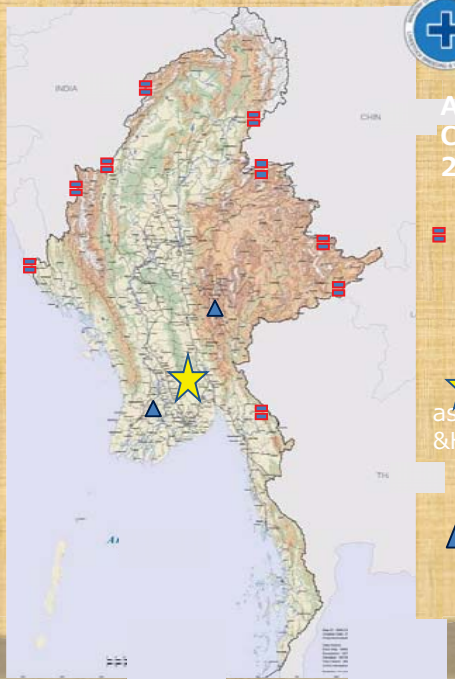
- **National Duck Cross Sectional Study in 54 townships**

Townships 5-10 flock out of 10 flock have antibody for H5

Townships 1-4 flock out of 10 flock have antibody for H5

Townships no duck flock have antibody for H5

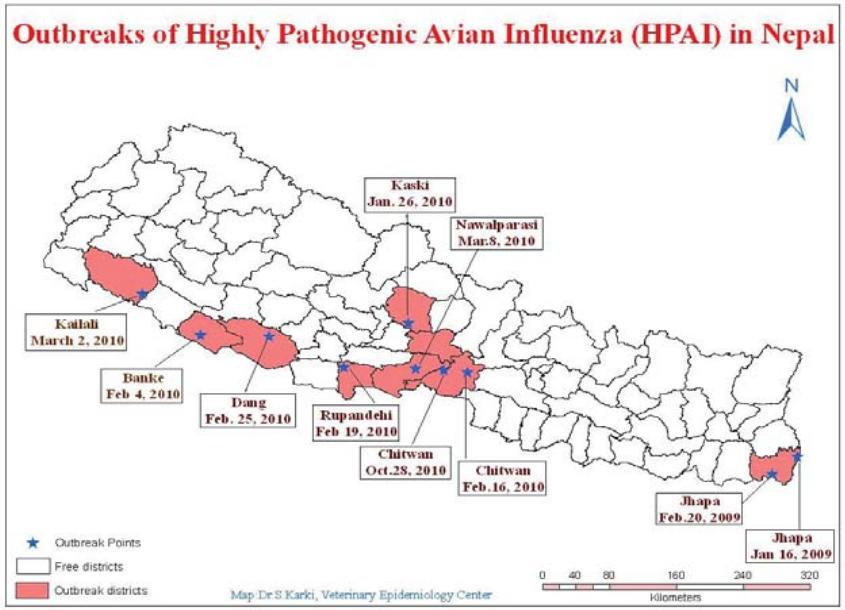
THANK YOU



Activities for Prevention and Control of Influenza (2009 and 2010)

- Border Area Supply Chain Study & Area Risk Assessment
- Moeyungyi Wetland and associated area Supply Chain Study &HPAI Risk Assessment
- Ayeyarwaddy Inlay Poultry Supply Chain Study and Area Risk Assessment

Overview of the recent HPAI outbreaks



HPAI control and prevention without vaccination in, NEPAL

Dr Bal Bahadur Chand

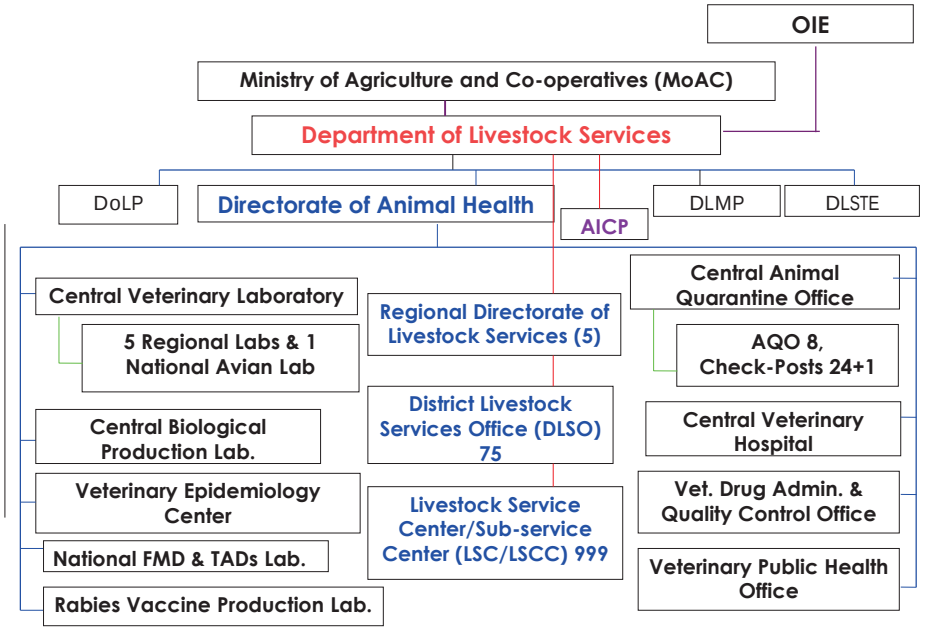
Senior Veterinary Officer

Directorate of Animal Health

Overview of the recent HPAI outbreaks (H5N1)

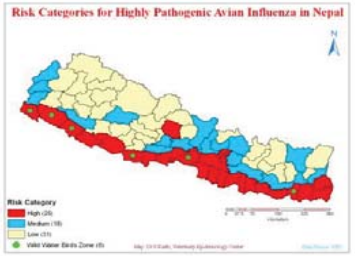
S.N	District	Date	Cases	Destroyed	Total	Type of Birds
1	Jhapa	16-Jan-09	14	24689	24703	Backyard chickens
2	Jhapa	20-Feb-09	150	2871	3021	Backyard chickens
3	Kaski	26-Jan-10	153	11128	11281	Backyard ducks , Chicken+commercial chicken
4	Banke	4-Feb-10	351	286	637	Backyard chickens
5	Chitwan	16-Feb-10	30	194	224	Backyard chickens
6	Rupandehi	19-Feb-10	256	358	614	Backyard chickens
7	Dang	25-Feb-10	2	0	2	Backyard chickens
8	Kailali	2-Mar-10	40	83	123	Backyard chicken
9	Nawalparasi	8-Mar-10	216	4551	4767	Backyard chickens
10	Chitwan	28-Oct-10	66	11437	11503	**Commercial Layers**
		Total	**1278**	**55597**	**56875**	

Institutional Framework



Policy to control HPAI

- Categorization of the country on the Risk basis
  - HRD, MRD & LRD
- Intensive surveillance in high risk areas
  - 26 district (8 site of each),
    - Weekly surveillance along the Route (contact Point/Persons)
  - 6 water bird zone
  - Live /wet market
  - Duck in Buffer zone
- Risk based surveillance
  - Duck sero-surveillance
- Rumor response
- Import ban from affected countries



Clades of H5N1 Viruses, Identified in Nepal

- 2 clades have been identified
  - Clade 2.2 (2009)
  - Clade 2.3.2 and 2.2 (2010)
- No Human cases so far
- Viral Source; ???
  - Migratory wild bird ??
  - Mutation ???
  - Terrestrial movements ??

Principal control/preventive measures

- Stamping out up to 3 km radius (infected zone) from the epicenter.
- Intensification of active surveillance within 7 Km radius out side the infected zone and through out the country
- Cleaning, Disposal and disinfection
- Movement control (Internal & crossborder)
- Quarantine inspection inside the country and across the border
- Import ban on poultry and products from infected countries
- Compensation
- No Vaccination
- No treatment of affected birds
- POS, No case: Free Declaration

Overview of the poultry industry

S.n	Categories	Estimated population	Growth rate
1	Commercial chicken	11.02	
2	Backyard chicken	13.46	
	Total chicken	**24.48**	**3.02**
3	Duck (Backyard)	0.38	0.51
Number of Muscovy duck, goose, farms not mentioned			

Advantages of HPAI control measures (good practices)

- **Active Participation of Stakeholders**
- Effective National Incident command structure in the control of epidemics
- Provision of Declaration of Provisionally infected Zone
- Declaration of Infected Zone (Declaration of Emergency)
- Effective Role of Local Government/community
- Zoning and Compartmentalization
- Stockpiling of necessary logistics to the risk sites
- Emergency procurement system
- Quick and effective response to suspicions (hotspots)

Active surveillance & Monitoring

- Weekly visit along the designated sites,
- Collection of information from the farmer & contact persons,
- Taking sample, if necessary & dispatch to Labs
- Dispatch the report (weekly & flash) to DAH/VEC
- Monitored by Focal officer of the district
- Verified the report by DAH/VEC (Visit /Phone)
- Response & Verification of each case (any HPAI related information)
- Monitoring & coordination by District Avian Influenza Control Committee

Medium & Long term strategy to control/eradicate HPAI

- Medium and Long term strategy is not so distinctly specified to control/eradicate disease,

  BUT, Overall strategy is:
  - Poultry policy (Draft) and contingency plan (HPAI) covered some of the aspect
  - Monitoring and alertness
  - Early detection
  - Rapid action
  - Biosecurity in the farms
  - Strengthen the capacity in all levels

Challenges of HPAI control measures

- Biosecurity
- Migratory waterfowl birds
- Live/wet markets
- Limited resource (Human, physical and financial
- Illegal importation/Movement
- Legislation (Disease control act ??)
- Poultry Policy
- Farm registration

Long term strategy to Control/eradicate HPAI

- Strong and effective legislative support
- Effective National, regional and local command structures
- Well written National Response Plans with Standard Operating Procedures (SOPs)
- Strong and **well funded** Veterinary Services sector
- Up to date veterinary legislation governing animal disease control and including a compensation.
- Good laboratory facilities as a backbone to an effective and functional surveillance system
- Public awareness and Communications

Thanks

HPAI control with vaccination in P.R China

Teng XiangYan

China Animal Health and Epidemiology Center

14th Sep, 2011

Overview of the H5N1 HPAI outbreaks and poultry industry

Year	Outbreaks	Cases	Deaths	Destroyed
2007	4	300	4950	37783
2008	6	--	5239	260660
2009	2	--	--	--
2010	--	--	--	--
2011	--	--	--	--

- ✱ At the end of 2010, the amount of livestock on hand of poultry was 5.6 billion;
- ✱ Slaughtered poultry population near to 10 billion in 2010, including 82% chickens, 13% ducks, 5% goose and others;

Principal control measures against HPAI

- Adhering to the policy of putting prevention first;
  - "*the Law of the People's Republic of China on Animal Epidemic Prevention*"
- Sticking to the multi-ministries cooperation mechanism;
  - *strengthen leadership, sound coordination, reliance on science and law, participatory approach, decisive intervention*;
- Persisting in integrated control measures;
  - movement control, stamping-out, disinfection and emerging vaccination will be applied when outbreak.

Framework of vaccination program

- Compulsory vaccination in high risk area since 2004;
- Compulsory vaccination for all poultry flocks in the whole country since 2005;
- Backyard poultry are subject to the spring and autumn vaccination campaign;
- Restocking poultry should be vaccinated in time;
- Poultry flock with protective titer lower than 70 percent will be subject to the reinforcing vaccination.

Vaccines Approved for Production and Use

Vaccines	Targeted uses	Remarks
H5N2 inactivated vaccine	Chicken, H5	First successful vaccine against HPAI
H5N1 inactivated recombinant vaccine （H5N1，Re-1）	chicken, duck and goose ,H5	Can be used for water fowl
H5 fowlpox virus vector-based vaccine （H5）	H5	Difference between infection by immunization and wild virus can be identified
AI-New Castle Disease bivalent recombinant vaccine（rL-H5）	H5 and Newcastle disease	First safe and effective live vaccine of negative link RNA in the world
H5N1 inactivated recombinant vaccine (H5N1，Re-1+ Re-4）	H5 and Newcastle disease	Precaution against AI caused by current H5 virus

Effective of vaccination program

- The vaccination density rate for required poultries exceeds 95%;
- Owners of poultry needn’t to pay any fees for vaccination;
- In 2010， 13.65 billion does vaccinations have been used for HPAI.

Advantages of using vaccine

- HPAI outbreaks have been reduced in significant;
- No outbreak occurred since May of 2009;
- Reduced the virus spread to the environment;
- Prevented the transmission of H5N1 virus from poultry to human.

Active surveillance program on HPAI in domestic poultry

- Annual National Plan on Surveillance of animal disease ;
- Annual National epidemiology investigation plan;
- Requirements:
  - Central level: antigen surveillance
  - Local level : antibody surveillance

Thanks!

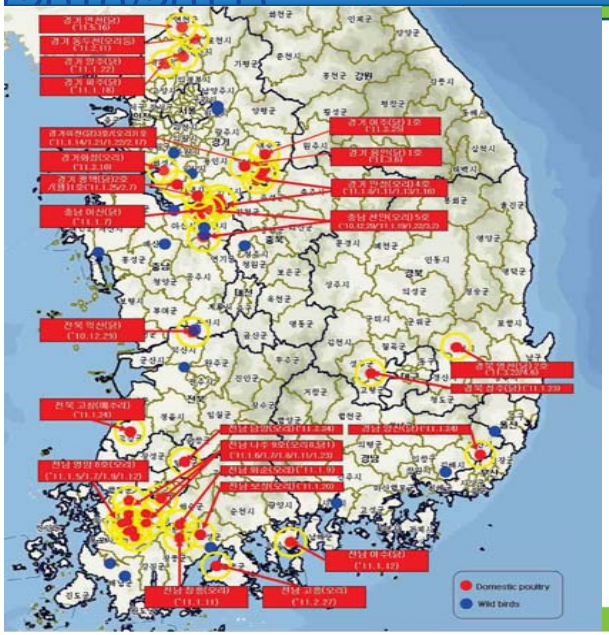
Challanges of using vaccine

- The vaccination coverage varies in different poultry species and in different types of poultry farms;
- Bio-security measures in the backyard or small-scale farms are often not practiced;
- The live bird markets nationwide;
- The variation of HPAI virus in field.

Medium and long term vision

- The current policy should be adhered;
- The new vaccine will be developed and applied by monitoring the variation of HPAI virus;
- Promote the surveillance and Early Warning capability；
- The long-term effective mechanism for HPAI control is going to be established;
- Enhance cooperation of across-sectors/international

HPAI(H5N1) Outbreaks (2010/2011)



Poultry

Total 25 Si/Gun
over 6 provinces
53 outbreak farms

Wild birds

Total 15 Si/Gun
over 7 provinces
20 outbreaks

HPAI outbreaks in Korea

- vaccine is not in practice

Animal Plant and Fisheries Quarantine and Inspection Agency(QIA)

Ministry for Food Agriculture Forestry and Fisheries(MIFFAF)

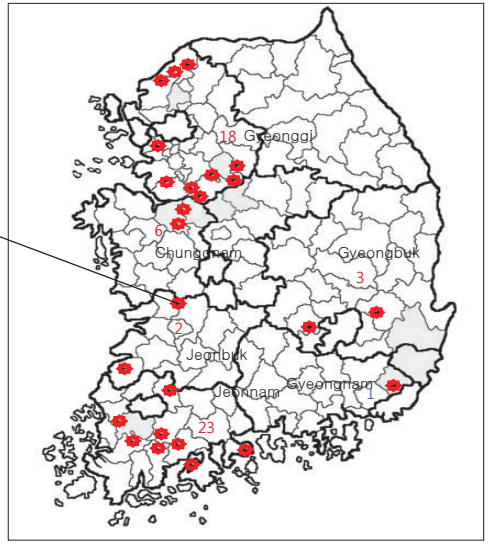
2011.9.15

Doo-seok Seo D.V.M. M.S

Outbreaks of HPAI in 2010-2011

201012.29~2011.5.16(53case)

2011.1.11 H5N1 detection(feces sample)



HPAI Outbreaks (H5N1)

Classification	2003 / 2004	2006 / 2007	2008	2010/2011
Duration	2003.12.10 ~ 2004. 3.20 (102days)	2006.11.22 ~ 2007. 3. 6 (104 days)	2008. 4. 1 ~ 2008. 5.12 (42 days)	2010.12.29 ~2011.5.16 (139 days)
Administrative areas	7 Provinces (10 Si/Gun)	3 Provinces (5 Si/Gun)	11 Metro cities/ Provinces (19 Si/Gun/Gu)	6 Provinces (25 Si/Gun)
Outbreaks	19	7	33	53
Affected poultry farms	Chicken 10, Duck 9	Chicken 4, Duck 2, Quail 1	Chicken 24, Duck 8, Others 1	Chicken 18, Duck 33, Quail 1, Pheasant 1
No. of poultry culled	392 farms 5,285 thousands	460 farms 2,800 thousands	670 farms 10,204 thousands	283 farms 6,427 thousands
Antigenic clade	HA 2.5	HA 2.2	HA 2.3.2	HA 2.3.2
Genetic analysis	Similar to isolates from migratory birds	Similar to isolates from migratory birds	Similar to isolates from migratory birds	Similar to isolates from migratory birds (99.4%)
Indemnity	$ 153 million	$ 58 million	$ 307 million	Calculating
Declaration of HPAI Free	2004.9.21	2007.6.18	2008.8.15	2011.9.2

Poultry population

As of Dec 2009

Chicken - 3,630 farms 149 million heads

- Breeders : 332 farms 9.6 million heads
- Layers : 1,535 farms 61.7 million heads
- Meat type : 1,763 farms 77.9 million heads

Duck – 1,085 farms 15 million heads

- Breeders : 150 farms 1.7 million heads
- Meat type : 935 farms 13.5 million heads

Other species – 2,704 farms 12.3 million heads

- Turkey : 574 farms 6 thousand heads
- Goose : 1,054 farms 6.4 thousand heads
- Quail : 144 farms 11.7 million heads
- Aquarium birds : 497 farms 80 thousand heads
- Ostrich : 170 farms 2.6 thousand heads
- Pheasant : 265 farms 464.6 thousand heads

Clinical signs

- Incubation periods : hrs-3 days (~21 days)
- High mortality (almost 100% in chickens)
- Depression, anorexia, ruffled feathers
- Facial edema, cyanosis of comb and wattle
- Petechial hemorrhages on leg

HPAI Control policy

Principle of control policy

- Prompt stamping out of affected flocks (500m or 3km)

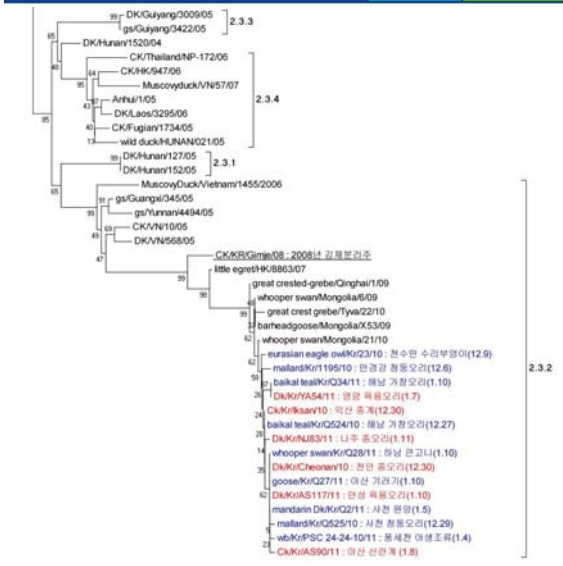
Vaccination policy - prohibited

- Capable of manufacturing inactivated virus vaccine
- But, vaccination will only be applied if HPAI outbreak is uncontrollable (like FMD vaccination case of Nov 2010)
- The decision will be made on 'Council for Animal Disease Control'

Risk assessment not to introduce the virus

- Early warning system based on routine surveillance
- Strong border quarantine (Poultry importation prohibited from HPAI infected country)

Phylogenetic Analysis



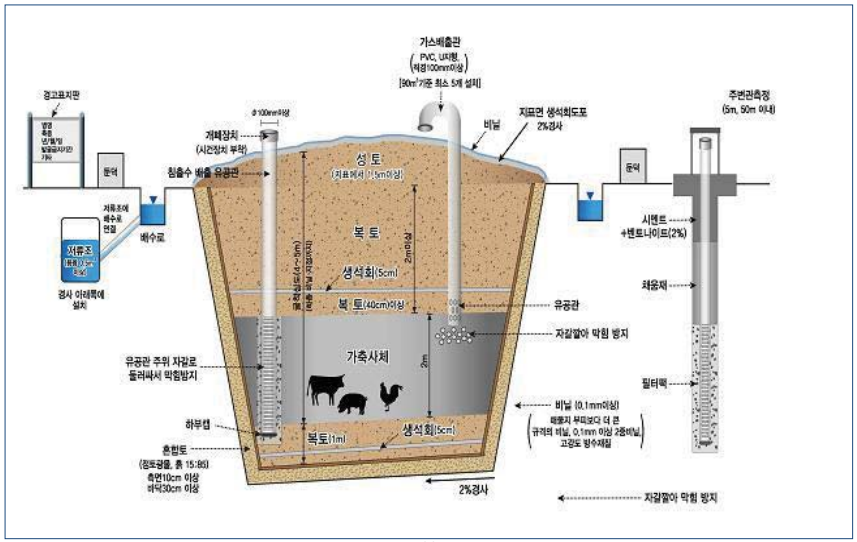
HPAIV isolated from Domestic Poultry

Homogeneity 99.4%

HPAIV isolated from Wild birds

Genetic relatedness between HPAIV isolated from Korea and HPAIV from wild birds in Northeast Asia (Mongol, China, Japan)

A diagram for burial site



HPAI control policy without vaccine

Principle control measures are same on HPAIV detection whether passive or active surveillance

"AI control guidelines"
"SOP for AI"
"Animal disease crisis management manual"

Emergency HPAI Control Center

- MIFAFF, QIA, Local VS, LHCA, etc

The infected farm or area

- Strict movement control (zoning and quarantine)
- Prompt stamping-out (100% indemnity)
- Epidemiological investigation
- No vaccination

Nationwide

- Intensifying biosecurity and disinfection
- Targeted surveillance (breeder ducks, etc)
- Education and public relations

Intensifying Border Quarantine
(Border Quarantine Management System)

AI monitoring system

- National plan for AI monitoring system

Sample collection
by live stock health control association, Regional vet lab., QIA
- Duck farm (breeder duck, meat duck & ecological farming duck)
- Chicken farm (GPS, PS, Layer, Native)
- Wild bird (feces, capture)
- Live bird market, other poultry such as quail & peasant
- Feed, pet bird, swine etc.

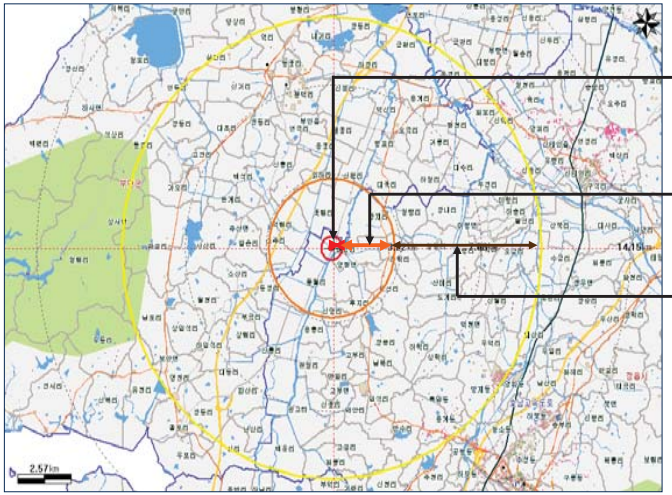
QIA
- Captured Wild bird
- Feed (imported ingredient)
- Swine
- Chicken (GPS)
- Other poultry

Regional Vet lab.
- Breeder duck
- Meat-purpose duck
- Chicken (PS, Layer, Native)
- Live bird market

Vet University
- Wild bird feces
- Pet bird
- Ecological farming duck
- Captured Wild bird

Confirmatory diagnosis by QIA

Movement restricted zone



Contaminated zone
(500m radius)

Protection zone
(3km radius)

Surveillance zone
(10km radius)

Advantages without vaccination

Advantages of control measures without vaccination

- Cost benefit compared to consistent vaccination fallowed by surveillance
- Prevention of silent infection concerning when using vaccination
  - virus shedding can be possible without clinical signs with vaccination

Good practices

- Early warning system based on surveillance program
- Fair compensation accompanied by prompt suspect reporting
- Strict control with cooperation of army (movement, biosecurity)

AI surveillance programme

Classification		Testing period	The frequency of testing	Testing item	Charged institute
Breeding duck		Mar~Apr, Jun~Jul, Sep~Oct, Dec	4 times	Ag, Ab	(Primary test) Regional(Si · Do) Lab. (Confirmative test) QIA
Meat duck				Ag	
Poultry being sold in the regional market		Feb~Apr, Sep~Dec	2 times	Ag	
Natural agricultural method for raising ducks		May~Jul	1 time	Ag, Ab	(Primary test) Vet. Univ., etc (Confirmative test) QIA
Capturing wild birds		**Ordinary times**	**-**	**Ag, Ab**	
Feces from wild birds		**Jan~May, Oct~Dec**	**8 months**	**Ag**	
Fowls for viewing or exhibition		Jan~Feb, Sep~Oct	2 times	Ag	
Pigs being raised in the hazardous area of AI		Jan~May, Sep~Dec	1 time	Ag	QIA
Imported materials for livestock feed		Jan~Dec	1 time	Ag	
LPAI (H5/H7) Ab test	GPS	120 days ~ Before laying	2 time (per group)	Ab	
	PS	Jan~May, Sep~Dec	2 time		(Primary test) Regional(Si · Do) Lab. (Confirmative test) QIA
	Layer				
	KNC				

Challenges without vaccination

Challenges of HPAI control measures

- Introduction of virus concerning factors below
  - Persistent outbreaks in neighboring countries
  - Location along the migratory routes of birds

Major concerns over HPAI control measures

- Organization of immaculate surveillance system for early detection
  - changed to routine surveillance all year round since 2008 outbreaks
- Intensification of border quarantine system
- Public relations and compensation to induce rapid reporting by farmers

AI routine surveillance results (2010)

Classfy.			Perform	Result	Positive
duck	breed	Ag	357 farms 4,630 samples	4 farms	H6(1), H7(3)
		Ab	354 farms 42,112 samples	-	-
	meat	Ag	3,001 farms 22,854 samples	47 farms	H3(5),H6(32), H7(3),H8(1), H9(2),H12(1), H3&H6(3)
	Eco-farming	Ag	27 farms 56 samples	-	-
		Ab	27 farms 580 samples	-	-
Wild bird	Feces	Ag	1,245 spots 5,089 samples	35 samples	H1(15), H3(1), H4(4), H5(1), H6(8), H7(2), H9(1), H10(2), H11(1)
	Capture	Ag	62 spots 1,700 birds	14 birds	H2(1), H4(4), H5N1(1),H6(3), H7(2), H10(3)
		Ab		6 birds	H5/H7(1), H5(5)
Imported feed		Ag	9 spots 312 samples	-	-

Classfy.			Perform	Result	Positive
Chicken	H5·H7 LPAI Ab test	PPS	15 farms 1,240 samples	-	-
		PS	315 farms 26,245 samples	-	-
		Layer	665 farms 16,037 samples	-	-
		Native	517 farms 12,198 samples	-	-
Others (Quail, geese, etc)		Ag	376 farms 3,504 samples	1 farms	H9(1)
		Ab	291 farms 7,304 samples	-	-
Live bird market		Ag	280 farms 2,362 samples	27samples	H3(3),H6(4), H9(19), H3&H6(1)
Pet bird		Ag	205 farms 410 samples	-	-
Swine		Ag	1,821 farms 30,974 heads	-	-

HPAI control strategy

- Strengthen Surveillance for Early Detection
  - Strengthen local diagnostic ability & control measures in the early stage
  - Strengthening routine surveillance (monitoring)
- Strengthen Veterinary services and related capacity
- Tighten up border quarantine
- Improvement of disease control regulations for HPAI
- Adjustment to animal husbandry system

Livestock Population

- Cattle - 1,185,000
- Buffalo - 308,000
- Goats & Sheep - 405,000
- Pigs - 85,000
- Poultry - 20,460,000

Country Report
Sri Lanka

Dr.K.Kuleshwarakumar

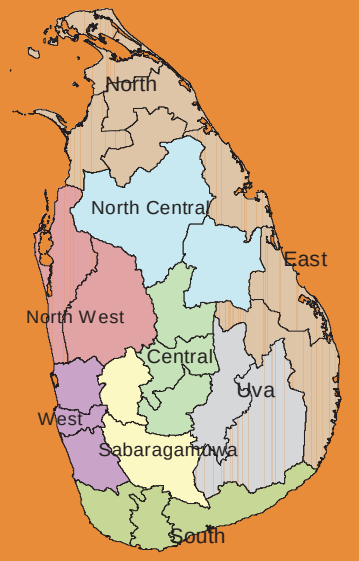
Provincial Director (Central)

Department of Animal Production and Health

Other Animals

- Rabbits - 10,000
- Cervide - 20,000
- Equines - 2,000

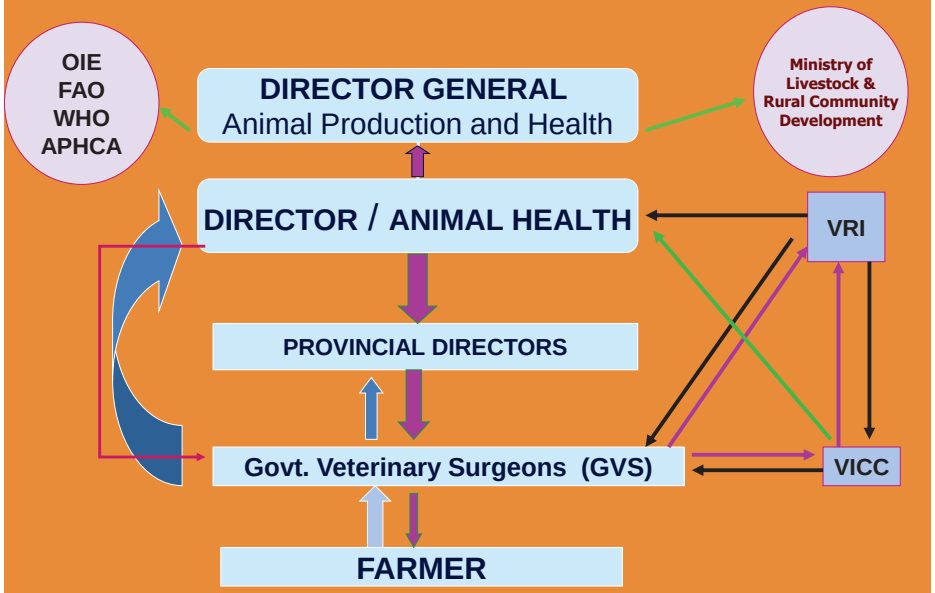
Provinces of Sri Lanka



9 Provinces

25 Districts

Animal Disease Notification Information Flow



Livestock organizational structure

- **Ministry of Livestock and Rural Community Development**
- **Department of Animal Production and Health (National and Provincial)**
- **Division of Animal Health**

Status at Stage I : Farmer Level

- Farmer awareness programmes to encourage early disease notification to the Govt. Veterinary surgeon
- Training on the usage of PPE and clear-cut messages not to get panic
- Enhance Passive disease surveillance

Livestock organizational structure

- **Provincial Director - 09**
- **District Veterinary Office - 25**
- **Govt. Veterinary Office - 260**

- ❑ **Veterinary Investigation Centres - 16**
- ❑ **Veterinary Research Institute**

Status at Stage IV : Local Laboratory Level

- **Veterinary Investigation Centres at District level (18/25)**
- Immediate notification of Notifiable diseases via Mobile phones (SMS). Investigation Report intimated via e-mail.
- Weekly disease report based on laboratory diagnosis : e-mail

Status at Stage II : Private Veterinarians

- Mainly Poultry and Companion animals
- Private Veterinarians are incorporated into govt. disease monitoring system.
- Monthly notification to Animal Health division of DAPH
- System developed and Operation initiated

Status at Stage V : Central Laboratory Level

- **Central Veterinary Investigation Centre Veterinary Research Institute (VRI)**
- Immediate notification in case of laboratory confirmation of Notifiable Diseases
- Monthly laboratory based disease Report to Animal Health Division

Status at Stage III : Local Veterinary Service

- **Govt. Veterinary Office at Divisional Level (260)**
- Monthly Disease Notification of diseases
- Immediate notification of 'Notifiable Diseases'
- **Daily Disease Notification : Telephone, Fax, e-mail**
- **On-line Disease Reporting system via SriLanka Animal Health Information System (SLAHIS) developed under the Avian Influenza Preparedness and Response Project funded by World Bank. *Connectivity has to be ensured to make the system in operation*.**

Thank you

Status at Stage VI : National Level

- Animal Health Division of DAPH
- FAO introduced TADinfo in operation
- Introducing Sri Lanka Animal Health Information System (SLAHIS) has been in progress.
- Animal Disease notification to OIE in online WAHIS is in smooth operation (Terrestrial animal diseases)
- Wildlife Disease Reporting is in Online operation
- Aquatic Animal Disease Reporting – New focal point appointed

Future Programme

- Connectivity of SLAHIS to the Govt. Veterinary Surgeon Level on pilot basis in one Province (Uva) in 2011
- Island wide operation of SLAHIS in 2012
- Facilitation via internet and IT provision at all divisional level Veterinary Offices.
- To develop an organizational arrangement to address zoonotic diseases, food safety &providing VPH services
- Networking with VICC, VRI and National and Provincial DAPH Head Quarters.

The poultry industry in Thailand

Overview

- Integrated System, Contract farming
- Control & Inspect by the DLD from farm to fork: animal health & Public Health
- 90% of poultry farms certified for GAP by the DLD
- Compartmentalisation-NAI free

HPAI Control and Prevention without Vaccination in Thailand

Duangdao Raksakul, DVM. MS.

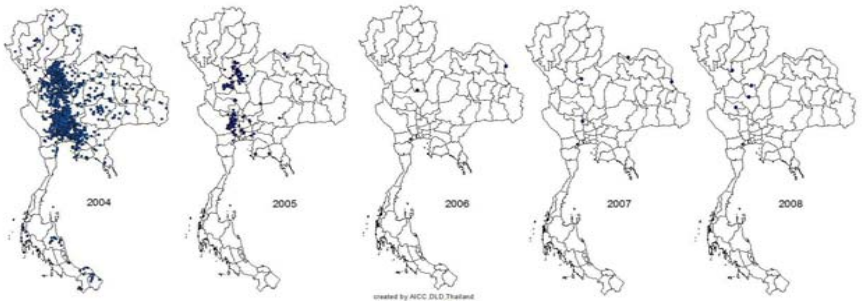
Department of Livestock Development (DLD)
Ministry of Agriculture and Cooperatives
Chiangmai, Thailand

Policy of HPAI control measures without vaccine in Thailand

- Decision making based on

- Effective control and prevention measures (stamping out, movement control, surveillance, compartmentalization)
- AI vaccination cannot protect infection but reduce the loss and obscure clinical signs.
- Cost of postvaccination surveillance is very high.
- Acceptance of trading partners

Situation of AI in Thailand during 2004-2008



Outbreaks and affected Areas	2004	2005	2006	2007	2008
Numbers of Outbreak	1740	194	2	4	4
Sub-district	783	110	2	4	4
District	298	59	2	4	4
Province	60	21	2	4	4

Advantages of HPAI control measures without vaccine

- No need to differentiate between vaccinated poultry and infected poultry
- No long term cost for vaccine including vaccine stockpile
- No risks for H5N1 spread within the flocks and to human
- International trade of poultry & their products

HPAI Disease Control and Prevention Measures

- **Stamping out** the affected premises
- **Compensation 75 %** of the local market price
- **Quarantine** & **Movement control** in 10 km radius, 30 days
- **Disinfection** of premises & infected materials
- **Disposal** of carcasses, products & infected materials
- **Restructure** of small scale poultry farms
- **Active surveillance** in all poultry groups in risk areas
- **Compartmentalization**
- **Coordination** with all authorities concerned – MOPH Natural Resources & Environment, Prov. Governor etc.
- **Public Awareness** & special Campaigns

Challenges of HPAI control measures without using vaccine in Thailand

- Free grazing ducks, backyard poultry, Nature wild birds
- The Restructure of small scale poultry farms enchance biosecurity management, confine poultry in housing.
- Surveillance to monitor risk of HPAI infection in the challenged groups

Surveillance and monitoring programmes

- **Active surveillance programme**

  Door-to-door clinical surveillance
  Intensive active surveillance (Serological and virological surveillance of targeted poultry types)
  Movement and slaughter surveillance (Random sampling)

- **Routine (Passive) surveillance programme**

  - Routine clinical surveillance by local surveillance network
  - Routine laboratory surveillance (cases submitted to laboratories)

- **Wild bird surveillance programme (Risk-based)**

Major concerns over the HPAI control measures without vaccine

- High mortality
- Illegal Vaccination
- Cost of culling

Medium and Long term view to control/eradicate/prevent HPAI

- Surveillance
- Restructuring small scale poultry farms and traditional duck rearing coupled with improving basic biosecurity management
- Compartmentalisation
- Strict poultry movement control
- Routine cleasing and disinfection
- Education & public awareness

Principal control measures against HPAI in Vietnam

- Control measures applied to contain the disease
  - Destruction of affected flock(s)
  - Movement control
  - Disinfection
  - Vaccination

HPAI control with vaccination in Vietnam

Phan Quang Minh
Department of Animal Health

Framework of vaccination programme

- National HPAI Vaccination Program – Phase IV (2011-2012)
- Vaccination is compulsory in high risk areas
- Chinese vaccines
- The government's subsidy

Overview of the recent HPAI outbreaks in Vietnam

– **2009**: 71 commune outbreaks (17 provinces); 127,725 birds culled (23,265 chickens (18%), 103,500 ducks (81%), and 960 muscovies (1.0 %))
– **2010**: 56 commune outbreaks (19 provinces); 75,970 birds culled (29,048 chickens (38,2%), 43,975 ducks (57,90%) and 2,965 muscovies (3,9%)).
– **2011**: 57 commune outbreaks (19 provinces); 103,452 birds culled (53,562 chickens (51,77%), 48,783 ducks (47,16 %) and 11,107 muscovies (1,07%)).

- Clades: 2.3.2 in the North; 1 in the South

- **Poultry population in 2010:**
  – Chicken: 218 million
  – Duck: 78 million

Evaluation of efficacy of vaccine

- Chinese vaccine: Re-5
- Efficiency test:
  - Virus Neutralisation Test
  - Virus challenge

Framework of vaccination programme

- Vaccination targeted at high risk areas: 25 provinces
- Chickens and ducks
- Twice per year

Results of vaccination

- Reduction in human cases
- No major poultry outbreak during last few years
- The quality of animal health data are regularly updated because veterinarians regularly visit households.

Surveillance programmes for HPAI

- Clinical surveillance:
  - Early detection
  - Timely reporting
- Virus surveillance
  - Live bird markets in high risk areas
- Post vaccination survey

THANK YOU FOR YOUR ATTENTION.

Results of vaccination

- Challenges:
  - Backyard poultry
  - Antigenic changes of H5N1 viruses
  - Vaccine products

What next?

- Virus surveillance
- Evaluation of vaccine efficacy
- Reviewing vaccination strategy
  - AI vaccine has been proved to be a good tool for HPAI control in Vietnam. However, AI vaccine has been subsidised by the Government and it is costly.
  - Long term strategy (2012-2015):
    - DAH will ensure vaccine quality and maintains vaccine storage for emergency situation. SDAH and local authorities will manage and organize vaccination campaign
    - Government will support for AI vaccine research and production in the country.
    - Poultry owners will pay for vaccination (vaccine purchase and other fee).
- Application of various disease control measures including (early detection, prompt response, disinfection, movement control) to control and eliminate the disease.

The fourth OIE Regional Meeting on Strengthening Animal Health Information Networking in Asia

(Final version) Conclusions and Recommendations

(Background)

1. OIE/Japan Trust Fund (JTF) Project on Strengthening HPAI control in Asia was launched in April 2008. The project is planned to be carried out for five years from April 2008 to March 2013.

2. The 4th OIE Regional Meeting on Strengthening Animal Health Information Networking in Asia was organised in Chiang Mai, Thailand from 14 -16 September 2011 with the support from the Japanese Government, the Ministry of Agriculture, Forestry and Fisheries (MAFF) in collaboration with the Department of Livestock Development (DLD), Ministry of Agriculture and Cooperatives of Thailand, with the main objectives as follows:
   (1) To share updated information and experience in animal health information networking
   (2) To review progress made by the OIE Members in Asia in line with the previous meeting recommendations
   (3) To discuss how to improve animal health information networking to strengthen animal disease control and prevention measures at national and regional levels
   (4) To discuss and review current H5N1 HPAI control measures in the OIE Members in Asia in particular focusing on vaccination

3. The meeting was attended by participants from 21 countries/territories namely: Bangladesh, Brunei, Bhutan, Cambodia, PR China, Chinese Taipei, Hong Kong SAR, Indonesia, Japan, RO Korea, Laos, Malaysia, Maldives, Mongolia, Myanmar, Nepal, the Philippines, Singapore, Sri Lanka, Thailand and Vietnam, local observers (Thai-DLD) and the FAO.

4. The participants actively participated in discussions to share their progress in animal health information networking made after the third meeting in 2010.

5. Experience and lessons learnt in HPAI control including vaccination policy/strategy by the participants and the governments that they represented were well shared for future actions/activities to be developed and implemented to further improve the information networking.

(Recognition)

The Meeting recognised:

6. The efforts and progress made by National Veterinary Services of OIE Members after the third meeting in 2010 to improve and strengthen the disease reporting mechanism at six stages; namely farmer, private veterinarian, local Veterinary services (including laboratory) and central veterinary services (including laboratory) levels.

7. Several OIE Members in Asia considered that constraints still exist in animal health information networking due mainly to the following.
   1) Limited knowledge in animal diseases and notification
   2) Delay in reporting
   3) Limited incentive to report diseases, for example, inadequate compensation mechanism
   4) Limited capacity to identify infectious diseases of animals and collection of appropriate specimen at field level for diagnosis
   5) Limited capacity in diagnostic laboratories at local and central levels and laboratory networking
   6) Limited legislation support
   7) Limited logistic support and financial resources

8. Progress achieved by some OIE Members in revising/drafting their incentive scheme/provision in order to encourage farmers/veterinarians/para-professionals to report disease outbreaks to the veterinary authorities.

9. Efforts made by some OIE Members to improve communication means (through telephone, fax, internet, SMS gateway, radio, etc.) for disease notification at field and local levels.

10. That good coordination and collaboration between OIE and other international and regional organizations, and bilateral development agencies is required to avoid duplication and make the most of their resources to promote animal health.

11. H5N1 HPAI is still persistent in some OIE Members in Asia even though they have made great efforts to improve the disease control and some OIE Members have experienced reintroduction of the disease or emergence of new clade of HPAI virus.

12. The continued efforts to eradicate HPAI in Asia by strengthening control and preventive measures, in particular early detection, stamping out, movement control, enhanced bio-security, post outbreak decontamination and surveillance systems.

The meeting reaffirmed that:

13. Vaccination against H5N1 HPAI is a relevant complementary measure in specific situations to prevent and control the disease. Vaccination should be always accompanied by and used with other classical control measures including stamping out, active surveillance systems and movement control.

(Recommendations)

The Meeting recommended:

14. That veterinary legislation be revised and be implemented in some countries/territories to regulate/improve/introduce adequate incentives, e.g. appropriate compensation scheme so that farmers and veterinarians will be encouraged to report and notify animal diseases to the relevant veterinary authorities.

15. That national Veterinary Services continue working to improve public awareness and veterinarians'/para-professionals' knowledge and capacity to identify and report animal diseases.

16. That the national veterinary services identify and support appropriate and sustainable laboratory capacity including both human and physical resources to address the need for animal disease surveillance and control.

17. OIE Members in Asia reporting HPAI, either sporadically or persistently, continue to review their control strategies, and adopt appropriate, evidence based control measures.

18. That OIE Members in Asia share information on HPAI virus strains circulating in their countries/territories including antigenic and genetic characteristics of these viruses.

19. That the participating countries/territories make efforts to establish/strengthen network and communication amongst them to share relevant information and data to improve the animal health situation in Asia.

20. Member countries/territories, who have not yet requested the OIE-PVS Evaluation, GAP Analysis and OIE Legislation missions, are encouraged to use these OIE initiatives to strengthen/improve their veterinary services including their national animal disease surveillance systems.

21. The OIE Regional Meeting on strengthening animal health information networking be organised annually to encourage OIE Members in Asia to strengthen animal health information networking in the region, with the following broad objectives.

(1) To share updated information concerning animal health information networking at national level

(2) To share experience, good practice and lessons learnt in relation to the function of animal health information networking

(3) To review progress and achievement made by countries/territories in relation to animal health information networking

(4) To discuss effective animal health information networking to strengthen animal disease control and prevention measures at national and regional levels

(Acknowledgement)

22. The participating countries/territories acknowledged the support from the government of Thailand in hosting the fourth meeting and continuous support from the Japanese Government (MAFF-Japan) through the JTF (Japan Trust Fund) Project.