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From strategy to operation: experience with
influenza in the Asia-Pacific region

Pakistan

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Coordinating Office for Global Health
Centers for Disease Control and Prevention (CDC)



FELTP-PAKISTAN
Field Epidemiology & Laboratory Training Program



Country Overview

- **Population:**
164,000,000
(Approximately)
- **Administrative regions**
 - **Provinces**
 - Baluchistan
 - NWFP
 - Punjab
 - Sindh
 - **Tribal areas**
 - FATA
 - FANA
 - AJK
 - **Capital**
 - Islamabad



Disease Surveillance in Pakistan

Joint Assessment by the MOH, WHO, CDC and the World Bank – 2005

- **Fragmented**
- **Vertically oriented**

Report No. 32963-PK

Pakistan's Public Health Surveillance System:

A Call to Action

**A Joint Assessment by the Ministry of Health, the
Government of Pakistan, the World Health Organization,
the Centers for Disease Control and Prevention, and
the World Bank**

**August 15, 2005
The World Bank**

First outbreak of AI

Date	Place	Event
Day 0	Abbottabad	Outbreak reported in poultry farm
Day 3	Abbottabad	Confirmed as H5N1
Day 4/5	Abbottabad	Culling operation
Day 12	Ayyub MC, Abbottabad	Livestock dept. Official (Index case?) participated in culling operation developed fever and body aches (8 days post exposure) but not admitted
Day 15	Peshawar	Index case goes to family home, still symptomatic, mingles with family members Presence of backyard poultry reported (1 fancy bird had died earlier)

First outbreak of AICont'd

Date	Place	Event(s)
Day 16/17	KTH, Peshawar	Index case reports difficulty in breathing, OPD treatment (antibiotics , antimalarial and analgesics given)
Day 19	KTH, Peshawar	Index case Admitted in ICU with pneumonia, reportedly received Tami Flu at later stages (not documented in hospital records) No lab samples collected for lab diagnosis of H5N1
Day 26	KTH, Peshawar	Contact 1 (brother of index case) admitted with fever and RTI. He had attended index case in hospital
Day 28	Peshawar	Index case recovered completely and discharged
Day 33	Peshawar	Contact 1 dies of undiagnosed Pneumonia. No sample collected for lab diagnosis of H5N1

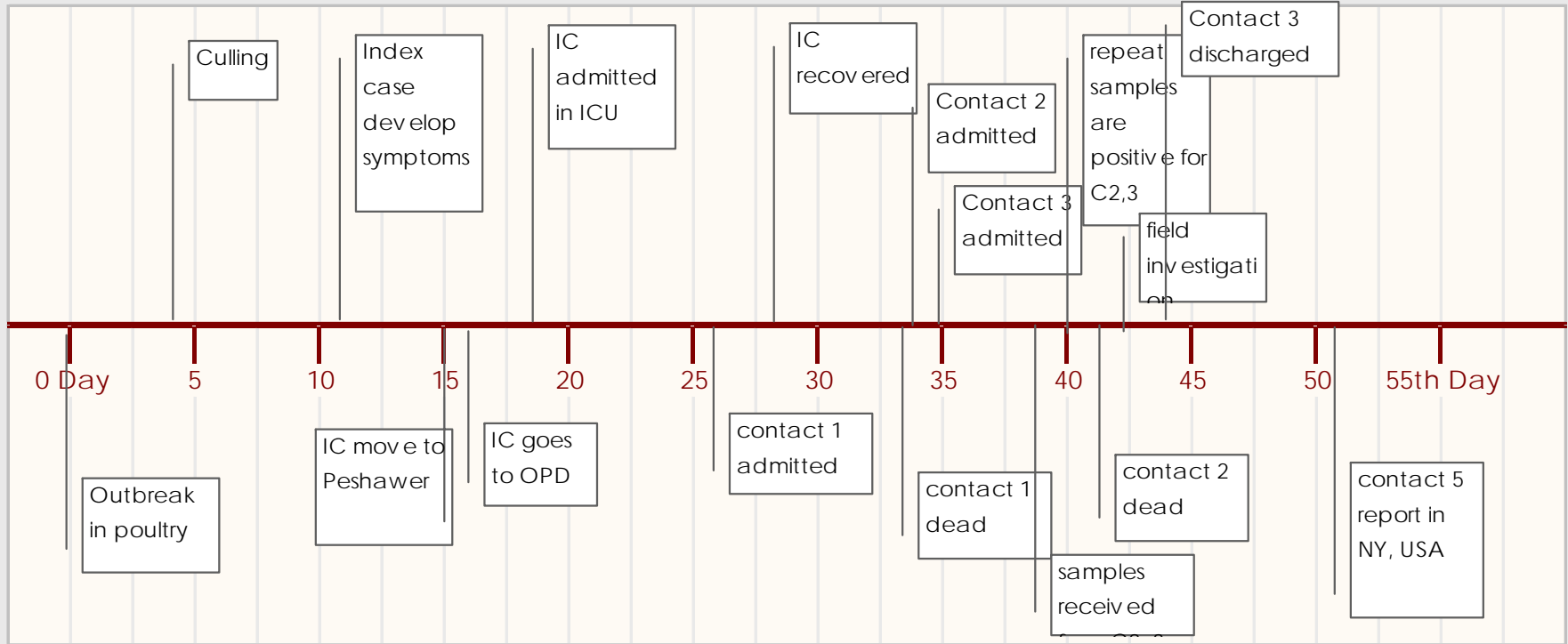
First outbreak of AICont'd

Date	Place	Events
Day 34	Peshawar	Contact 2 , brother of Index case and Contact 1 admitted with fever. Received TamiFlu? Sample not collected for lab diagnosis of H5N1
Day 35	Peshawar	Contact 3 , another brother of index cases and attendant of contacts 1 and 2, becomes symptomatic and is admitted with fever and RTI
Day 38	Islamabad	Samples from contacts 2 and 3 received at NIH for H5N1 but were found unsatisfactory
Day 40	Islamabad	Repeat samples of contacts 2 and 3 received at NIH and tested positive for H5N1
Day 42	Peshawar	Contact 2 dies of Pneumonia. Confirmed H5N1 infection. NIH Teams deputed to carry out full epidemiological investigations

First outbreak of AICont'd

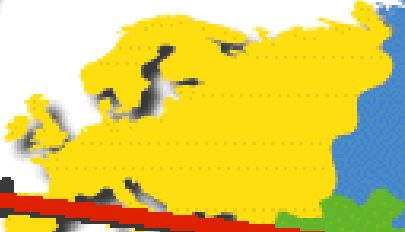
Date	Place	Event
Day 43	Peshawar Abbottabad	WHO/CDC joins epidemiological investigations, now extended to Abbottabad
Day 44	Peshawar	Contact 3, received TamiFlu from beginning recovers and discharged later
	Peshawar	Contact 4, another brother of index case and Contacts 5 and 6 form KTH hospital staff (01 ward boy & 01 Doctor) receive TamiFlu for mild symptoms
Day 51	New York	Contact 7, another brother of index reports Upper RTI on his return to USA after attending the funeral of his deceased brothers, admitted in New York, tested negative for H5 and recovered

Timeline





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Measures taken before the episode

MANAGERIAL

- Collaborative linkages (May 2005)
- District Monitoring & Response Committees (Nov. 2005)
- Focal Persons nominated (Nov. 2005)
- Monitoring Cell at NIH (Feb. 2006)
- Approval of the PC-1 (18th May 2006)
- Joint National Steering Committee (26th June 2006)

LABORATORY CAPACITY

- Real-Time PCR; 1st RT-PCR in the WHO-EM Region
- Cell culture and serology
- Supply of special sample transport medium
- NIH - CDC for Lab-based Influenza Surveillance
- Start of construction of BSL-3 lab

Measures (Contd...)

MONITORING & SURVEILLANCE

- **Active Surveillance, 03 Kms (Since Feb. 2006)**
- **Hospital-based (20) surveillance of severe pneumonia (Mar. 2006)**
- **Toolkit/Guidelines/SoPs on surveillance, sample collection, clinical management**
- **National Guidelines for detection of human cases and outreach response**

CAPACITY & COMMUNICATION

- **Training of Master trainers**
- **14 national firms registered (generic *Oseltamivir*)**
- ***Oseltamivir* stocks for:**
 - **7000 patients (1000+6000) at NIH**
 - **9750 patients at PIMS**
 - **989 patients at FGSH**
- **Communication strategy (Jan. 2006)**
- **Media campaign (Mar. 2006)**

Observations

- **Absence of Rapid Health Response Teams**
- **Minimal involvement of District Health Team in the outbreak response**
- **Lack of trained manpower?**
- **Non-availability of Antiviral medicine**
- **Lack of recommended skills in the management of AI cases**

Observations Contd'

- **Absence of Pneumonia Surveillance at Tertiary care hospitals facilities**
- **Status of infection control in hospitals**
- **Deployment of Personnel Protective Equipment (PPE)**
- **Lack of equipment in the ICUs (ventilators)**
- **Poor and unsafe transportation of biological samples**
- **Expectations from the Federal MoH and WHO**

Steps taken

(Human and Animal Health cooperation)

- **Ministries of Health and Livestock**
 - **National Programs for Prevention and Control of Avian and Pandemic Influenza**
- **livestock sector**
 - **surveillance for AI (200,000 samples/year)**
 - **No AI outbreak in poultry has occurred in Pakistan since July 2008**
- **A Joint Steering Committee**
 - **Federal /provincial/district**

Steps taken (Surveillance)

- **National Institute of Health (NIH)**
 - **WHO**
 - **NAMRU-3**
 - **CDC, Atlanta**
- **NIH are implementing a 05 years Lab based Influenza Surveillance Programme with the technical assistance from Centers for Disease Control (CDC), Atlanta**
- **Till date approximately 800 seasonal influenza and 43 suspected novel H1N1 samples have been processed at NIH**
- **The National Reference Biosafety Level-3 Laboratory at NIH is in final phases of its construction and is likely to be commissioned by December 2009**

Steps taken (preparations)

- **National Task Force on Communicable Diseases**
 - draft action plan for pandemic influenza
 - recommendations for Hajj 2009
- **Federal Monitoring Cell at NIH**
- **Viral transport media**
 - Provincial departments of health
 - Airports
- **Manufacturing generic version of Oseltamivir (Tamiflu)**
- **200,000 doses of antiviral medicine Oseltamivir (Tamiflu and other)**
- **Standard Operating Procedures for Surveillance and Rapid Response for Cases of Pandemic Influenza**

Steps taken (preparation)

- **Personnel Protective Equipments (PPEs)**
- **Training of public health / healthcare professionals by FELTP Pakistan**
 - **Surveillance**
 - **Outbreak detection and Response**

Field Epidemiology and Laboratory Training Programme (FELTP) at NIH

- 02 years master level training in field and applied epidemiology in collaboration with CDC, Atlanta
- Regular short courses on diseases surveillance, outbreak investigation and response
- Provincial surveillance and response cells will be fortified with manpower trained under FELTP



Steps taken (Hajj/pilgrimage)

- **3 million in 2008**
- **KSA**
 - 600 infected persons
 - 20 deaths
- **160,000 Pakistani pilgrims are expected**
- **MOH, Pakistan**
 - **Enhancing surveillance**
 - Adding Medical Surveillance officers
 - Daily monitoring and reporting from KSA
 - **Returning pilgrims**
 - Identification and isolation facilities

Acknowledgements

- **MOH, Pakistan**
 - Dr Rashid Jooma
 - Dr Birjees Mazher Kazi
 - Dr Muhammad Salman
 - Dr Rana Safdar
- **Weekly epidemiological record**
(3 OCTOBER 2008, 83rd YEAR)2008, No. 40,
2008, 83, 357–364, <http://www.who.int/wer>

Thank You

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Coordinating Office for Global Health

Division of Epidemiology and Surveillance Capacity Development

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The Division of Epidemiology and Surveillance Capacity Development (DESCDC) is part of CDC's Coordinating Office for Global Health. DESCDC works to improve the health of the people of the United States and other nations by partnering with national and international organizations and foreign governments to build strong, transparent, sustained public health systems.

DESCDC aims to strengthen public health systems through training, consultation, capacity building, and assistance in applied epidemiology, public health surveillance, evaluation, instructional design, and other disciplines.

Since 1980, DESCDC and its international partners have built numerous long-term applied public health training programs on six continents.

Spotlights

Our division is undergoing a name change, from the Division of Epidemiology and Surveillance Capacity Development to the Division of Global Public Health Capacity Development (new proposed name) as we join with the [Sustainable Management Development Program](#). As we go through this transition period, you may see both names used in documents or on the websites. We appreciate your patience as we make these changes.

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Influenza websites

Influenza (CDC)

<http://www.cdc.gov/flu/>

H1N1 (CDC)

<http://www.cdc.gov/h1n1flu/>

H1N1 (WHO)

<http://www.who.int/csr/disease/swineflu/en/index.html>