Air Force Institute for Operational Health (AFIOH)

Birthplace, Home, and Future of Aerospace Medicine

Global Influenza Surveillance at AFIOH

19 Dec 2006
Institute of Medicine

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Global Influenza Surveillance at AFIOH

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Overview

Birthplace, Home and Future of Aerospace Medicine

- Overview of AFIOH
- Brief historical background
- Current surveillance process
- Resources and capacity
- Historical successes
- Questions
- Backup slides
  - Lab PI processes
  - Results summary
  - Weekly Report
The mission of the AFIOH is to provide world class occupational, environmental, and public health expertise to operational decision- and policy-makers.

- **Resources:**
  - ~400 personnel: 152 military, 117 civil service, ~140 contractors
  - FY06 operating budget: $12.7M + $18.0M one-times
  - Facilities: ~180K ft²: 3 main and 6 smaller buildings
- **Operations:**
  - Labs: ~2M analyses/yr (clinical and environmental)
  - Consultants: ~200 formal technical reports/yr; 1000s of phone calls; scores of site visits; reps on ~98 external/professional organizations
  - Business operations: centralized contracting for relevant services
- **Unique deployable teams**
  - AF Radiation Assessment Team
  - Theater Epidemiology teams
Brief Historical Background

“Project Gargle” began in 1976
- USAF’s systematic annual collection of FRI specimens from clinics and hospitals around the world

Expanded efforts in 1997
- DoD Global Laboratory-Based Influenza Surveillance Program
- AF designated as the Executive Agent for lab-based program
- Funding & professional guidance from DoD-GEIS

Components of the Lab-Based Surveillance Program
- Sentinel site influenza surveillance
  - Managed at AFIOH, Brooks City-Base, TX
- Population-based respiratory surveillance
  - Managed at NHRC, San Diego, CA
Surveillance Process (cont’d)

56 Global Sentinel Sites
- 43 US MTFs located worldwide
  - DoD beneficiaries
  - Hospitals, health clinics, Emergency clinics, Pediatric clinics
- 2 MTFs serving foreign military beneficiaries
  - 2 military hospitals in Hungary
- Multiple treatment facilities in 13 allied countries
  - Civilian patients in allied countries
  - Via DoD overseas labs

Future Countries (in the negotiation process now)
- Brazil
- Israel
- Caribbean states (through SOUTHCOM)
- South Africa, Georgia, Romania, Bulgaria (through EUCOM)
Current Presence

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[Map showing current presence with color codes:
- Green: WHO NIC Presence
- Blue: AFI OH / WHO NIC Presence
- Red: AFI OH Presence]
A/New Caledonia/H1N1 isolated from Peruvian military cadets. First time seen in Americas. Selected for vaccine component.

A/Panama/2007/H3N2 isolated from Howard AFB. Selected as vaccine component.

Variant A/H3N2/A/Fujian isolated from Korea

Variant B/HongKong/Victoria identified from Hawaii

Influenza B outbreak in Virginia

B/Malaysia identified at Luke AFB & Nepal. Selected as vaccine component.

All continents affected by Influenza A/H3N2/Fujian Variant, not included in the vaccine components.

*As of 12 June
Impact

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• CDC has received > 900 isolates (1998-2006)
• Growing number of sites internationally
• Identify genetic drifts/shifts through sequencing
• Vaccine contributions in the past:
  • A/Panama/H3N2, 1998: Seed virus for vaccine 4 yrs
  • A/New Caledonia/H1N1: Peruvian cadets, 1999 (led to component decision)
  • A/California/H3N2: Nepal, 2004
  • B/Malaysia: Arizona and Nepal, 2005
• Continuously verify changes or similarities in circulating viruses identified by CDC & WHO.
Influenza Program

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BACKUP SLIDES
AFIOH Laboratory Workload
2006-2007 Seasonal Year

- Current Week
- Cumulative

Week Entered

# of specimens in current week

Cumulative # of specimens

0 500 1000 1500 2000 2500 3000 3500 4000 4500
Laboratory Workload, 05-06

Laboratory Processing by Week and Year
Influenza Season 2005-2006

- Influenza A
- Adenovirus
- Enterovirus
- RSV
- No virus isolated
- Influenza B
- Parainfluenza
- HSV
- Mumps
- Incomplete

As Of 12 Dec 2006
Laboratory Workload, 06-07

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Laboratory Processing by Week and Year
Influenza Season 2006-2007

Number of Specimens

2006

Influenza A
Adenovirus
Enterovirus
RSV
Incomplete

Influenza B
Parainfluenza
HSV
No virus isolated

As Of 12 Dec 2006
Weekly Reports

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DoD Global Influenza Surveillance Program:
Influenza Surveillance at AFIOH

Week 44 06-11 November 2006

Influenza Surveillance (01 Oct - Present)
19 Influenza isolates
13 Influenza A H3N2
10 Influenza B
42% of completed specimens were positive for an Influenza virus
12% Influenza A, 17% Influenza B

Locations of Lab-confirmed Influenza

Human Avian Influenza (H5N1) Update

In October 2006, a total of 105 highly pathogenic human H5N1 cases (among non-DoD personnel) were WHO-confirmed in Azerbaijan, Cambodia, China, Colombia, Egypt, Indonesia, Iraq, Thailand, and Turkey (data as of 31 October 2006, WHO).

Click on the following links for updates regarding human H5N1:
1. World Health Organisation (WHO)
2. Centers for Disease Control and Prevention (CDC)
3. Global Emerging Infections System (GEIS)

Regional Avian Influenza Surveillance Lab

Influenza Outbreaks / News

No outbreaks have been confirmed or made aware to AFIOH among surveillance sites this week.

AI/EEB initiated efforts to expand surveillance in 8 regions in Brazil.

AI/EEB leads efforts to improve laboratory capacity throughout Europe. AFIOH will continue to report the CCDS.Com's surveillance data and maintain the DoD repository for surveillance sites.

AFIOH anticipates providing weekly updates or molecular characterization data analyzed from respiratory specimens submitted to the program.

AFIOH Sentinel Surveillance Program

Weekly Report

12 December 2006 - 16 December 2006

Global Impact of Bird Flu
Source: BBC
Confirmed H5N1 strain only
Human cases: laboratory-confirmed since Dec 2003
UK cases discovered in quarantine, no human case reported
Current as of January 13, 2006

Confirmed Human Cases of H5N1 in Turkey
Source: BBC
Confirmed H5N1 Cases
- 5 cases, including 2 deaths
- 6 cases, including 2 deaths
- 9 cases, including 2 deaths
- 11 cases, including 2 deaths
- 12 cases, including 2 deaths
- 13 cases, including 2 deaths
- 14 cases, including 2 deaths

Confirmed Human Cases of H5N1 in Turkey
Source: BBC
Confirmed H5N1 Cases
- 2 cases in H5N1
- 3 cases in H5N1
- 4 cases in H5N1
- 5 cases in H5N1
- 6 cases in H5N1
- 7 cases in H5N1
- 8 cases in H5N1
- 9 cases in H5N1

Cumulative Number of Confirmed Human Influenza A (H5N1) Reported to WHO as of 12/1/2006

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<tr>
<td>China</td>
<td>70</td>
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<tr>
<td>Indonesia</td>
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<td>Thailand</td>
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<td>Turkey</td>
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<td>Total</td>
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HEADLINES: AVIAN INFLUENZA

Chile Reports Ninth Bird Flu Death
Source: BBC
- January 18, 2006
Turkey Bird Flu Fatality Rate Low
Source: AP
- January 18, 2006
Iraq Tests Dead Girl for Bird Flu
Source: AP
- January 18, 2006
Turkey Races to Curb Mutated Bird Flu Virus
Source: AP
- January 18, 2006
World Bank Approves First Bird Flu Funding
Source: AP
- January 18, 2006
EU Pledges 168M to Bird Flu Fight
Source: AP
- January 18, 2006

1.5 Billion Needed to Prepare for Bird Flu
Source: AP
- January 18, 2006
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FY07 AI/PI Surveillance Funding
“Where We Need to Go”

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- Sustainment of FY06 Efforts
- Support of Central Hub and Communications Center (24/7) capability
- Expansion of surveillance sites at overseas locations
- Expansion of diagnostic & reporting capabilities
- Expansion of educational and PI preparedness activities at military installations