CDC’s Influenza Surveillance Program

First Meeting of the IOM Committee for the Assessment of DoD-GEIS Influenza Surveillance and Response Programs

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Overview

- CDC’s surveillance goals
- Domestic surveillance program
- International surveillance activities
- DoD – CDC collaborations
Influenza Activities at CDC

- Vaccine policy
- Pandemic preparedness
- Rapid diagnostic development
- Characterizing host response
- Evaluating transmission
- Epidemiology and Surveillance
Domestic Influenza Surveillance Goals

• Identify and characterize circulating viruses
• Determine the timing of influenza activity
• Identify location of activity and track geographic spread
• Determine disease burden associated with influenza
• Maintain platforms / systems that can be used to monitor program impact
Domestic Influenza Surveillance: Uses of Data

- **Disease Surveillance**
  - Informs policy recommendations
    - Use of antivirals and vaccines
    - Identification of high risk groups
  - Data for public health communications to partners / public
  - Assessment of vaccine effectiveness
  - Effectiveness of pandemic mitigation strategies
Uses of Data: Virologic Surveillance

- Informs annual vaccine strain selection
- Assesses match between vaccine and circulating strains
- Allows detection of novel viruses (e.g. avian, pandemic)
- Antiviral resistance assessment
CDC – DoD collaborations: domestic surveillance

- DoD sites participate in laboratory surveillance in the US
  - Report lab tests/positives through electronic lab surveillance system
    - 2005-6 – 739 reports from 27 states
- Submit isolates to CDC for characterization
  - 14 isolates submitted in 2006 (Alaska, Hawaii)
- VA and DoD sites participate in Biosense
- Possible expansion of population-based sites for vaccine and antiviral effectiveness
CDC’s Influenza International Surveillance Activities
CDC’s international influenza activities: Principles

- Contribute to capacity of existing WHO Global Influenza Network
  - 117 NICs in 87 countries
- Capitalize on and collaborate with current CDC and USG assets in the field and at CDC
  - Including DoD installations
- Provide appropriate mixture of country specific, regional and global activities
- Address the USG strategy and three pillars
  - Preparedness & communication, surveillance, response
- Emphasize basic capacity development that will serve a country well for seasonal influenza, pandemic influenza and other emerging diseases
International Influenza Surveillance Goals

- Identify and characterize circulating viruses
  - WHO Collaborating Center for Influenza
- Establish disease burden in countries where data are lacking
- Support early identification of novel influenza viruses and disease
  - Avian influenza cases in humans
  - Onset of pandemic influenza
International Influenza Surveillance Goals

- Identify and characterize circulating viruses
  - WHO Collaborating Center for Influenza
WHO Collaborating Centers for Influenza Worldwide

Countries containing at least 1 WHO influenza laboratory

WHO Collaborating Centers - Atlanta, London, Melbourne, and Tokyo
Roles of CDC as WHO Collaborating Center for Influenza

- Analyze viruses submitted by NICs (6,500-8,000/yr)
  - Sharing of isolates and reagents
- Prepare and distribute reagents worldwide
- Provide data and analyses for Northern and Southern hemisphere vaccine strain selection
- Confirm novel viruses
- Assist with outbreak investigations
- Develop/evaluate vaccines
CDC’s Role as WHO CC for Influenza: Training & Technical Support

- Standard WHO Influenza Surveillance Manuals
- WHO lab training courses
- WHO epidemiology training courses
- Training of scientists in Atlanta
- Focused support for many countries affected by H5N1
  - Assistance with obtaining or direct funding
  - Provide assistance for development of national surveillance action plans; Lab program reviews
  - Technical & material assistance
  - Reagents and protocol

Expand NICs to include new countries or improve existing NICs
CDC’s support to WHO for influenza surveillance

- Provide resources (financial and/or technical)
  - WHO Headquarters – Geneva
  - All WHO Regional Offices
  - WHO Country Offices
- Support country assessments
  - Technical assistance and support
- Placement of staff at HQ and Regional Offices
- Support for shipping fund through WHO HQ for shipment of isolates to WHO Collaborating Centers
DoD Contribution to CDC and WHO Influenza Surveillance 2005-06*

- 2006: n = 1345 isolates to CDC
- 2007: n = 353 international isolates submitted
- 25 countries
  - 10 without NIC
- Close collaborations with NAMRU-2, NAMRU-3, AFIOH

DoD isolates + NIC
DoD isolates, no NIC
International Influenza Surveillance Goals

• Identify and characterize circulating viruses
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• Establish disease burden in countries where data are lacking
International activities: Surveillance methods development

- Work with WHO to develop and test standard surveillance methods for influenza
  - Based on sentinel surveillance for seasonal influenza
  - Component of community surveillance for unusual clusters / events for pandemic influenza / avian influenza

Pilot testing
- PAHO – start this year several countries in region
- EMRO – building on existing surveillance systems
  - Nigeria
  - Kenya
  - Kyrgyzstan

*NAMRU-3 partner in EMRO, Kyrgyzstan surveillance*
International Influenza Surveillance Goals

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International activities: Training

• **Rapid Response Teams**
  – Goal of developing capacity to investigate and respond to possible early pandemic influenza

  **Recent progress**
  – Thailand course for Southeast Asian countries
  – Work with WHO to adapt / harmonize materials
  – Recent courses in EMRO (7 countries), Kenya (7 African countries), Laos, Atlanta (for EIS officers), USA (CSTE)

• **Surveillance and laboratory**
  – Uganda (8 African countries of the region)
  – Thailand, Brazil, Vietnam, India, China and others (rtRT-PCR)

• **Monitoring and evaluation**
  – Three trainings for international grantees (Kazakhstan, Nairobi, Washington)
International activities: Outbreaks and Containment

- CDC participates with WHO teams
  - Characterize transmission, risk factors, sero-prevalence
- Outbreak Investigations since 2003:
  - Turkey
  - Djibouti
  - Nigeria
  - Sudan
  - Indonesia
  - Vietnam
  - Thailand
CDC’s international influenza activities:
Support

- Direct bilateral funding to countries with National Influenza Centers since 2004 – now in 29 countries.
- Support to CDC’s Global Disease Detection (GDD) sites
- Support to Global AIDS Program sites
- Support to NAMRU2 & NAMRU3
- Support to WHO HQ and all WHO Regional Offices
- Assignment of Influenza Division staff to international posts for technical support
- Short-term technical support from Atlanta
  - Surveillance development
  - Training: Rapid Response, Lab
  - Pandemic Planning
  - Containment, outbreak response
By mid-2007 – 18 staff in 15 countries

- WHO HQ (2), SEARO, WPRO, AFRO, WHO (Vietnam)
- ECDC
- NAMRU-3, NMRID, NAMRU-2 (Cambodia)
- MOHs – Indonesia (2), Cambodia, Laos, Vietnam
- GDD sites – Thailand, China, Kazakhstan

Role: to provide technical support to host agencies / countries re AI and PI preparedness
International Activities and Support
FY 2004

- 9 country grants
- WHO (HQ, WPRO, PAHO)
- NAMRU-2
International Activities and Support
FY 2005

- 13 country grants
- WHO (HQ, WPRO, PAHO)
- NAMRU-2, NAMRU-3
- CDC staff (5)
International Activities and Support
FY 2006

- 31 grants to 29 countries
- WHO (HQ, 6 WHO ROs)
- NAMRU-2, NAMRU-3
- GAP office support
- Support of CDC field stations
- CDC staff (18 -proposed)
Support for International Activities

US $ (Millions)

FY 2004 FY 2005 FY 2006 FY 2007*

Special Supplemental
CDC special funds
HHS-IAA
CDC
Conclusions

• Recent dramatic increase in global influenza activities at CDC
  – Staff – domestic and international
  – Funding to support partners
  – Type and amount of activities

• Surveillance activities intended to build and extend WHO global surveillance structure

• DoD-GEIS
  – Long-term, critical partners
    • Surveillance
    • Response
    • Liaisons to host countries
Thank you