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# Background (I)

- Respiratory virus surveillance non-existent in Ethiopia prior to 2005
- Activities initiated in response to Avian Influenza (AI): late 2005

# Background (II)

- Emergency national task force of AI (October 2005)
- Task force composed of:
  - National Coordinating Committee (decision-making body)
  - National Technical Committee (advisory role provided by technical experts)
- National Technical Committee prepared 3-year Preparedness and Response Plan to (2006-2008)

# Background (III)

- Fed. Ministry of Health & Min. of Agriculture & Rural Development (MoARD)
- AIS underway in wild and domestic birds since 2006 by MoARD.
- Formal designation of National Influenza Laboratory (NIL) at EHNRI in July 2007.

# Influenza Sentinel Surveillance (ISS) Activities

- Standard case (WHO/AFRO)
  - Guidelines
  - Detailed implementation guidelines
  - Case-based report formats & lab formats
- Setting criteria for site selection
- Formal launching of ISS in Sept. 2008

# Influenza Sentinel Surveillance (cont.)

- Selection of 2 sites in Addis Ababa:
  - Health center based (targeting mild Influenza-like illness cases, all ambulatory patients) (Shiro Meda Health Center).
  - Hospital based (targeting more severe, acute respiratory infections, mostly all were inpatients) (Yekatit 12 Memorial Hospital).
- Sites equipped (refrigerators, basic furniture, computers/printers, & spec coll dev)

# Influenza Sentinel Surveillance (cont.)

- Training provided to staff of sentinel sites on goals of ISS & on specimen collection, storage, transport etc.
- Patients of all age groups targeted (but in practice almost exclusively pediatric age group only at SARI site) \*
- Specimen type: oropharyngeal (throat) swabs collected in absolute ethanol or viral transport media (VTM).

# National Influenza Laboratory

- Under umbrella of Virology & Rickettsiology Research Group (Infectious & Non Infectious Diseases Research Directorate of EHNRI)
- Staff profile: 3 full-time staff and 2 part time staff (1 PhD, 4 BSc., additional staff to be recruited).
- Received training in real-time & conventional PCR techniques.
- Lab has real-time PCR Platform (AB 7500 FAST System).



# National Influenza Laboratory (Cont.)

- Lab participation in WHO External Quality Assurance Programme (EQAP) for the detection of Influenza viruses by PCR (Panel 6, July 2009).
- Lab not yet doing virus culture.

# National Influenza Laboratory (Cont.)

Number of specimens collected to date:

- ILI site = 89
- SARI site = 132

Total number of specimens analysed for Flu A from routine sentinel surveillance to date:

- ILI site = 60 (55 analyzed for both flu A + flu B)
- SARI site 47(32 analyzed for both Flu A + Flu B)

(\*limited testing conducted for seasonal influenza, due to shortage of PCR reagents)

# Preliminary Results

- Number of flu A positive samples from ILI site= 8 (~ 13%)

## Breakdown By Flu A Subtype

- 1 seasonal H1
  - 4 seasonal H3
  - 3 not determined
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- Only 1 Influenza B positive specimen found (~1.7%)

# Preliminary Results (Cont.)

- Number of flu A positive samples from SARI site = 3 (~ 6.4%)

## Breakdown By Flu A Subtype

- All were seasonal H3
- No Influenza B positive specimens found amongst SARI group.

# Combined Results (ILI + SARI sites)

- ILI + SARI for Flu A testing only = 147
- ILI + SARI for Flu A AND Flu B testing = 87

**Total No. Flu A positive samples = 11 (~7.5%)**

# Surveillance for New Pandemic Influenza A (H1N1)

- Re-activation of task force set since late April 2009 (under newly designated National Council of Zoonoses).
- In addition to the 2 regular sentinel sites, additional site named where suspect cases advised to report (initially St. Paul General Specialized Hospital, later on, St. Peter's TB Specialized Hospital).

# Surveillance for New Pandemic Influenza A (H1N1) (Cont.)

- Nearly 80 suspect cases reported (mostly self-reporting cases, with recent travel history).
- First cases detected in mid June 2009 (recently returning students from the US).
- To date, 17 cases of influenza A positive specimens detected from suspect cases by National Influenza Lab (21%). Out of these 10 (59%) were positive for new influenza AH1N1...

# New Pandemic Influenza A(H1N1) (Cont.)

- Nearly one third of suspect cases reported having contact with known confirmed case of new pandemic influenza A(H1N1).
- Predominant presenting symptoms in patients with new influenza A(H1N1) was fever, cough, sore throat and occasionally superimposed joint pain/headache, diarrhea & vomiting.
- No cases of new pandemic influenza A(H1N1) detected from among routine influenza sentinel surveillance samples so far.



# New Pandemic Influenza A(H1N1) (Cont.)

- Five original clinical samples of new influenza A(H1N1) sent to WHO Collaborating Center at CDC, Atlanta for further characterization.
- Three of the virus isolates which could be cultured successfully were analysed using hemagglutination inhibition (HI) test and sequencing. All 3 belonged to the A/California/07/2009-like (H1N1) lineage and were sensitive to Tamiflu.

(Note: virus failed to grow in culture from the other 2 specimens.)

# Other General Activities Relating to Influenza Surveillance

- Preparation of training modules on Avian Influenza for different groups of health professionals (from Dec. 2005 onwards).
- Training provided for regional rapid response teams (RRT) on how to conduct outbreak/field rumor investigations where AI suspected.
- Orientation provided to hospital medical directors on new pandemic influenza A(H1N1) (epidemiology, standard case definition, collection of specimens for lab analysis).

# General Activities (Cont.)

- Provision of rapid antigen test kits and some PPE to regional labs (N95 respirators, gloves, goggles etc.)
- Training given to laboratory professionals from regions on lab diagnostic techniques for influenza.
- Rumor field investigations (outbreaks of flu-like illness in various parts of country by collaborating with Public Health Emergency Management Directorate).

# General Activities (Cont.)

- Participation in various local & international influenza meetings since 2005.
- Presentations at various scientific fora.
- Preparation of proposal to fund activities related to influenza surveillance in Ethiopia (now into Year 3 of funding from CDC cooperative agreement ).

# Future Direction of Influenza Surveillance in Ethiopia.

- Expansion of sentinel sites to regions (2009/2010).
- Providing training to staff of new sentinel sites on the goals of ISS, specimen taking etc.
- Upgrading capacity of National Influenza Lab (NIL) to start virus culture work (2009/2010).

# Future Direction of Influenza Surveillance in Ethiopia (Cont.)

- Continued participation of NIL in WHO EQAP twice annually.
- Building capacity of regional labs to perform PCR testing for influenza (supplying equipments etc.)
- Organizing training for lab personnel from different health institutions to perform PCR testing for influenza.

# What Are Some of the Anticipated Key Challenges?

- Competing health priorities and ensuring program stays on track when the perceived threat is low (policy level).
- Logistical constraints (principally ensuring steady supply of lab consumables, lab reagents etc.)
- Staff motivation of clinical personnel at sentinel sites (for quality data collection: accurate recording of epidemiological information from patients, weekly aggregated data etc.)

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- CDC Ethiopia
- CDC Kenya
- WHO Country Office
- WHO AFRO
- WHO HQ
- JHPIEGO



**Thanks!**