National Strategies for Controlling Avian Influenza Viruses

India
Background information

- Animal population (2007 census) – 500.00 m + 648.83 m poultry
- Major animal diseases of concerns:
  - Foot-and-Mouth Disease (serotypes O, A and Asia 1) - Cattle and Buffaloes
  - *Peste des petits* ruminants (PPR) - Sheep and Goats
  - Newcastle Disease and Highly Pathogenic Avian Influenza (H5N1) - Poultry
Influenza outbreaks history

- Surveillance for Avian Influenza was started by the country in 2001 through HSADL, Bhopal.
- H5N1 Highly Pathogenic Avian Influenza outbreaks were first reported in 2006 in the States of Maharashtra, Gujarat and Madhya Pradesh.
- Since then, H5N1 virus has been isolated almost every year till August 2013 (a total of 97 outbreaks has been reported in domestic poultry in 13 States).
- Besides domestic poultry, the H5N1 virus has been isolated from Crows in the States of Jharkhand, Bihar, Odisha, Maharashtra and Uttar Pradesh.
H5N1 HPAI outbreaks in domestic poultry

2006
18 Feb - 4 April, 2006 (7 outbreaks) MH-4, MP-1

2007
26 July 2007 (Manipur) 1 outbreak

2008-1st

2008-09-2nd
28 Nov 08 - 20 May, 09 (28 outbreaks) Assam - 17 WB - 10 Sikkim - 1

2010
15-19 Jan, 2010 (5 outbreaks) West Bengal
H5N1 HPAI outbreaks in domestic poultry

2011-1\textsuperscript{st} & 2011-2\textsuperscript{nd} & 2012-1\textsuperscript{st} & 2012-2\textsuperscript{nd} & 2013 \\
National control strategy

- The Prevention, Control and Containment of Avian Influenza is governed by an Action Plan (revised in 2012)
- Area within 10 km radius from the epicenter is identified as “Alert-Zone”
- Restriction of movement of personnel & vehicles within alert zone
- Depopulation of birds in the “infected zone” (the area within one km from the epicenter)
- Disposal of dead/culled birds/infected material is by burning/burial as per prescribed procedure in Action Plan
- Clean-up and disinfection of the infected premises
- Post Operation Surveillance and Freedom from Disease - Surveillance Zone is the area beyond the infected area (between 1-10 km from the epicenter)
National surveillance program

- **Surveillance in absence of AI outbreaks**
  - Passive surveillance-Clinical cases
  - Active surveillance in poultry- For agent detection and sero-surveillance
  - Targeted surveillance- wild birds, live bird markets, ducks and other waterfowls

- **Surveillance during the outbreak**

- **Post operative surveillance plan- 3 Months post outbreak**

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Laboratory diagnosis

- National Laboratory Network for AI diagnosis:
  - OIE Ref Lab for AI (NIHSAD, Bhopal), NIV (Pune)
  - 6 Regional Disease Diagnostic Labs (Jalandhar, Kolkata, Guwahati, IVRI-Bareilly, Pune, Bangalore)

- Laboratory diagnosis:
- Agent Identification:
  - Direct viral RNA detection - by RT-PCR (using specific primers against NP and HA genes) and Real time RT-PCR (using primers & probes against M and HA genes)
  - Virus Isolation: In SPF eggs/ Ab negative chickens & by
    - HA Subtyping- using HA and HI tests (with sub-type specific serum), RT-PCR (using specific primers against NP and HA genes) and Real-Time RT-PCR (using primers & probes against M and HA genes)
    - NA subtyping- RT-PCR, Real time RT-PCR & Neuram Inhibition Assay

- Antibody detection:
  - Influenza A virus detection antibodies to any influenza A virus.
Vaccination programme (if relevant)

- As a policy, vaccination against AIV is prohibited.
Lessons learnt

- Culling of birds is effective in controlling Avian Influenza outbreaks. However, reports of outbreaks of Avian Influenza in wild birds also (e.g. crows) is a matter of concern.

- Strengthening of Regional Disease Diagnostic Laboratories in the country for surveillance & diagnosis helped in effective implementation of National Control Strategy.
Future Plan

- Surveillance and other control measures are on-going process
- Stress on surveillance in Live bird markets with emphasis on environmental samples, International borders, areas near wetlands/ water-bodies and nesting places of migratory birds
- Biosafety and Biosecurity measures to be strengthened.
- Further strengthening laboratory infra-structure for testing of Avian influenza
- Review of Action Plan on Avian influenza from time to time based on experiences/ scientific knowledge
- Regular review of the preparedness of the States for control and containment measures
Thank you

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