subject: Surveillance Plan for Avian Influenza in the country - reg.

Avian Influenza is a highly contagious, dreadful avian disease with a zoonotic potential. A good surveillance mechanism is of utmost importance for a good disease control programme as far as Avian Influenza (AI) is concerned.

2. This Department has been issuing advisories to States from time to time on strengthening preparedness measures and surveillance for prevention and control of Avian influenza. Action Plan also highlights the importance and modes of surveillance on Avian influenza for early detection and prevention measures.

3. This Department, in consultation with concerned Ministries/organizations has devised a 'Surveillance Plan for Avian Influenza' in the country. A copy of the same is enclosed for meticulous implementation of the Surveillance Plan.

Encl: As above

Distribution:
Principal Secretaries/Secretaries of Animal Husbandry & Veterinary Services of all States/UTs.

Copy to:
 i) Directors of AH of all the States/UTs.
 ii) Director, Indian Veterinary Research Institute, Izatnagar, Bareilly, UP.;
 iii) Director, Project Directorate on Animal Disease Monitoring and Surveillance System (PD-ADMAS), Hebbal, Bangalore, Karnataka.
 iv) The Joint Director, High Security Animal Disease Laboratory, Anand Nagar, Bhopal.
 v) The Joint Director/Deputy Director-in-charge of all RDDLs (Jalandhar, Kolkata, Guwahati, Bangalore, Bareilly and Pune).
 vi) NIC for putting on web site of the Department, under 'Bird Flu' link.

Copy also to:
PPS to Secy. (ADF)/AHC/PS to JS (LH)
Surveillance Plan for Avian Influenza

Disease surveillance is an integral and key component of all government veterinary services. It is of utmost importance for animal disease emergency preparedness particularly for the diseases like Avian Influenza. This is important for early warning of diseases, planning and monitoring of disease control programmes, provision of sound animal health advice to farmers, certification of export livestock / livestock products, international reporting and evidence of freedom from diseases.

How will it benefit?

i. Surveillance will help in early detection of the disease and hence in taking the preventive actions

ii. Knowing the epidemiology (transmission routes, virus evolution etc.) of the disease

iii. Risk analysis for having trade of livestock/ livestock products

Objectives

1. Early detection of clinical disease and infection
2. Assess temporal and spatial patterns of the disease to improve effectiveness of control efforts
3. Demonstrate country free from the disease

The surveillance plan may be divided into three parts, as is in the Action Plan, as suggested below:

   Chapter I: Surveillance in the absence of Outbreak
   Chapter II: Surveillance during the outbreak
   Chapter III: Surveillance for 30 days after the completion of control and containment operation (Post-Operation Surveillance Plan)

CHAPTER I. - Surveillance in the Absence of AI

Avian population at risk

There is a need to define and identify the population at risk of infection with HPAI in the first instance. This is done in accordance to the bird population in the area
Population at high risk for Avian Influenza

(i) Commercial birds with high density - chickens and ducks
(ii) Backyard Birds – chickens, ducks, pigeons and other species - The bio-security is usually poor and there is no specific population estimate or density distribution estimate for backyard birds.
(iii) Wild/migratory birds
(iv) Live bird markets particularly at the border areas

The risk factors are summarized as under:

1. Disease situation in neighboring area across the border
2. States/districts previously affected by HPAI and adjoining states/districts
3. Shared borders with endemic country like Bangladesh and high risk states/districts of countries like Nepal
4. Domestic duck populations
5. Backyard bird populations
6. Number and activity of live markets
7. Poultry Value chain/ Wholesale live bird markets
8. National sanctuaries, wetlands / lakes used by migratory wild birds and their proximity to domestic poultry population/ establishments

More efforts are required in the high risk areas/ hot spots.

Method of surveillance and type of samples

1. Passive Surveillance

All stakeholders/ poultry producers/ entrepreneur, associations, private veterinary practitioners, community organizations, wildlife officials, NGO participatory groups, veterinary institutions and village animal health workers are required to report "any unusual sickness or mortality in poultry and other species of bird.

2. Active Surveillance

Active surveillance (Physical/Clinical Surveillance)

Visiting commercial farms, backyard poultry and live bird markets (LBMs) for clinical examinations by the veterinary authorities
Active surveillance (based on sample testing)

i) Swab samples from sick bird and collect dead birds from specific bird populations at risk
   - Swab sample shall be taken from trachea, cloaca or fresh wet faeces.
   - Tracheal samples are best for species with the virus accumulating in the respiratory tract (chickens).
   - Cloacal swabs are best for species with the virus accumulating in the intestinal tract (ducks).
   - Fresh, wet faeces swabs are useful for birds that are not handled (wild birds) or where it is uncommon to see sick or dead birds (live market and wild).
   - Fresh faeces from live bird market and wild water bird zone.

ii) Environmental samples
   - drinking water
   - waste water
   - droppings in the cages
   - processing tables
   - knives etc.

Pooled samples (pool size of 6) should be taken from the environment.

iii) Blood samples (serum) from healthy ducks:
    The blood samples are required as the targeted surveillance in the areas of high risk in chicken too. The blood samples are necessary to detect the presence of Low Pathogenic Avian Influenza virus where the birds do not show the disease despite being positive; or they show very mild symptoms. H7N9 infection in China is the recent example of the same where the birds did not show the disease but affected the human beings and caused severe disease in humans. International organizations have put a special emphasis on sero-surveillance for detection of H7N9 virus.

iv) Dead birds: A fresh whole carcass is extremely valuable with any species of bird. After proper wrapping, whole carcasses should be submitted for testing.

v) Live Bird market (LBM) may be included in the surveillance strategy due to programming ease. The live bird markets play an important role in the early detection of circulating virus amongst the poultry population through the use of serological sampling. The bio-security
needs to be strengthened in the live bird markets. The market closure is a good option and should be encouraged in the event of suspicion and at least one day closure in a week in normal situation.

3. Targeted Surveillance: In the areas/sites of high risk, targeted surveillance should be conducted.

Wild birds and Domestic ducks in Buffer Zones

- Sampling on wild dead birds should be carried out in all identified wildlife sanctuaries/water bodies & buffer zone around such areas
- Fecal samples from live wild birds may be collected from the wild birds nesting places and water bodies. Blood samples (serum) from domestic ducks be collected from buffer zones (national park, lake and watershed areas)
- Wildlife officials, conservation organizations, participatory groups and the public residing in the vicinity of water bodies are required to report freshly dead birds to DAHO for sampling. After proper wrapping, whole carcasses should be submitted for testing.
- Migratory waterfowl may be sampled by collecting fresh wet feces from areas used overnight by the birds in conjunction with wildlife officials.

Ten (10) pooled samples each containing feces samples are to be taken once monthly at each designated wildlife sanctuaries/water bodies during the wild bird migration season from September to March of each year. Five separate samples are to be placed in one media tube (pooled) and repeated 10 times for each sampling zone each month.

Domestic backyard ducks

Serum sample (10 ducks per month chosen at the sampler’s discretion in the buffer zone of each water bodies during the wild bird migration season (September to March). Border vigilance by the states bordering the neighbouring countries shall be stepped up.

Sampling framework
Live Bird Markets:
The pooled samples are to be taken. In a small unit of 100 birds, six samples each are to be taken from:

i. Environment
ii. Cloacal swab
iii. Tracheal swab
iv. Serum

A market with a population up to 2000 birds will be considered as a small market and above 2000 birds be considered a big market. From the markets, the number of samples to be taken is 60 from environment, 60 each from Cloaca, trachea and serum wherever possible. These samples are to be pooled.

If there are ducks in the market, addition samples from duck sera (60 in number) and cloacal swabs (60) are to be taken.

The frequency of the sampling will be once a month.

Poultry adjacent to sanctuaries, wetlands / lakes used by migratory wild birds and their proximity to domestic poultry population/ establishments:

A farm of 500 birds is considered a unit. From 500 birds, six sample each from environment, cloaca, trachea and serum are to be pooled. The sample size will be multiplied according to the bird population, the maximum number being the 36 samples of each type. The frequency of the sampling will be once a month. Addition samples of duck sera and cloacal swabs are to be taken, if there is duck population.

Poultry adjacent to international borders:

A farm of 500 birds is considered a unit. From 500 birds, six sample each from environment, cloaca, trachea and serum are to be pooled. The sample size will be multiplied according to the bird population, the maximum number being the 36 samples of each type. Addition samples of duck sera and cloacal swabs are to be taken, if there is duck population.

The frequency of the sampling will be once a month.

Migratory/ wild birds:

Attempt should be made to take ten pooled samples of fresh faeces from wild/ migratory birds/ water fowls, with the help of Wildlife officials. The frequency of sampling is once a month from September to March months. The nesting places of migratory birds should be aimed specifically.

Surveillance data collection, analysis, monitoring and reporting
Data will be compiled, analyzed, monitored, and a report created by Veterinary Epidemiology Centre. This report will be in electronic form and be sent every month to: DADF, RDDL, and respective State Directorates (AH).

CHAPTER II- Surveillance during Avian Influenza Outbreak

A specific surveillance strategy needs to be applied in the Infected and High Alert Zones.

Surveillance during outbreak:

Surveillance Team: it may be composed of DAHO/ Veterinarian, Veterinary Technician, Helper.

The number of surveillance teams shall depend upon number and size of the outbreak, and risk. Such teams shall be appointed by Director, AH of the State and shall work in association with control room. Such teams shall formulate surveillance program and road map in their respective areas as per the surveillance plan.

1. Activities to be carried out in the Infection Zone: (up to 1 kilometers radius)
   i. HPAI surveillance shall be carried out during culling activities
   ii. After culling, cleaning, and disinfection, environmental sampling shall be carried out
   iii. When re-stocking is allowed, clinical observation and sampling shall be carried out
   iv. Infected premises shall be visited by the veterinarian weekly for 30 days to inspect the sealed gate, burial site, and to confirm no restocking of poultry.

2. Activities to be carried out in the Surveillance (High Alert) Zone: (up to 10 kilometers outside infected zone)
   i. Visit all commercial poultry and backyard premises- clinical surveillance followed by sampling of sick dead birds on daily basis to see that the markets are closed.
   ii. Visit live bird markets, poultry distributors, slaughter facilities, and other key stakeholders on daily basis.
   iii. Conduct community dialogue and sample collection as indicated on daily basis

Chapter III: - Surveillance for 30 days after the completion of control and containment operation (Post Operation Surveillance Plan)
Formation of the Surveillance Team

The number of surveillance teams shall depend upon number and size of the outbreak, and risk. Such teams shall be appointed by Director, AH. Such teams shall formulate surveillance program and road map in their respective areas as per the surveillance plan.

The surveillance teams will be responsible for regular surveillance of backyard birds including live bird market and commercial poultry area/farms in their territory. Surveillance team shall report at least twice a week to Director, AHO. They are also responsible to monitor the illegal import and transport of any kind of poultry and poultry products. They shall monitor the local market and poultry outlets. Surveillance activities shall be carried in the infected zone, surveillance zone and Dangerous Contact and the whole district and risk areas of adjoining districts.

Sampling and Testing Methodology

Surveillance and sampling should be as per the following sampling plan:

a. Commercial/backyard/live market chickens (sick or dead) - tracheal swabs, fresh feces, fresh whole carcasses
b. Commercial/backyard ducks - Cloaca! swab, blood (serum) samples from sick and healthy birds, whole carcass in recently dead birds
c. Ducks in wild water bird buffer zones - Cloaca! swab, blood (serum) samples from sick and healthy birds, whole carcass in recently dead birds
d. Wild birds - the fresh whole carcasses if dead. Sample of fresh wet feces and Tracheal/ cloaca! swabs from the live birds, if possible.

Sample Type and Size:

The proportion of fowl and duck samples will be at the ratio of 2:1 fa? giving special emphasis on ducks. Samples will be collected both from poultry units and backyard poultry as detailed below:

i. **Poultry units:**

   a) Poultry farm having at least 50 birds will be treated as poultry unit.
   b) The sample size will be 6 for a poultry unit having population of 50-1000 and 18 for bigger units.
   c) The samples will include both serum and cloaca! swab in a ratio of 2:1.

ii. **Backyard poultry:**
a) Collect samples from 50% villages of every Gram Panchayat in POS zone.
b) The sample will include both serum and cloacal swab in a ratio of 2:1.
c) The sample size per village will be 9.

iii. Periodicity of sampling:

Samples shall be collected in 4 phases on fortnightly basis and no sample shall be collected more than once from the same farm/village. Sampling will be done only once from a particular poultry unit/ village.

iv. Surveillance in the Re-populated Poultry Unit /Sector:

The repopulated flock in the former affected area will be screened periodically over the next two months. Random clinical, virological and serological investigations on the repopulated flocks are to be carried out at least once every fortnight as detailed below:

   (i) Poultry Units: Sampling of 0.5% of the population introduced subject to a minimum of 6 samples and maximum of 18 samples. Both serum and cloacal samples will be collected in a ratio of 2:1.

   (ii) Backyard Poultry: Sampling of 0.5% of the population introduced will be done subject to 6 samples per sector. Both serum and cloacal samples will be collected in a ratio of 2:1.

(v) Sampling for surveillance of H7N9:

The surveillance for H7N9 could be restricted to collection of samples from Live Bird Markets. The modus operandi could be to initiate the sample collection from the markets bordering Nepal, Bhutan and Bangladesh and thereafter, in order to know the H7N9 status of the country LBMs of the States have to be targeted.

Sample Size: Sample of Blood/sera and cloacal/tracheal swabs (150 no's each) from the LBMs pooled in 10 samples) 30 environmental samples (pooled separately) may also be collected from the same LBMs.