

Addendum to NAP-AI-2015

Guidelines for Zoological Parks

General Precautions:

1. There should be no import of any animal or bird without observing quarantine for a minimum of 21 days. A well equipped quarantine animal house/ birding place to be created, if not already existing. Only after the imported animal is found free of any infection, should it then be allowed to mix with resident animals or birds.
2. No visitor should be allowed to take food from outside for the animals/ birds, nor be allowed to throw feed or any object inside the cage/housing/shed.
 - a. Staff movement, visitors, laborers and delivery boys as well as researchers including volunteers and students should always follow a protocol before entering the premises for normal work purposes because they may have contact with other pets / farm animals / birds in their homes. Humans can transmit diseases either mechanically, through fomites or as a result of anthroozoonosis.
 - b. Caretakers/ attendants/ sweepers/ Persons should enter the animal cages/ animal houses/ inside the fencings only with change of clothes and gum boots/ shoes separately for each cage; such provisions may be made at the entry to the animal housings. They should also be provided with caps that cover their hair completely. Entry points should be provided with disinfectants in a tray and every attendant/ vet/caretaker should take necessary precautions while entering.
 - c. Every person entering/exiting zoo animal pen should be encouraged to wash their hands often. Therefore outside the door and inside the house there is a need to provide wash basins with disinfectant solution.
 - d. Place informational signage at the entrance to all bird areas identifying them as a site for biosecurity precautions.
 - e. Instruct employees not to come to work and to call their supervisors if they have a bird at home that is sick or has died.
 - f. Include employee education efforts such as the following measures: 1) Hold general employee biosecurity briefings at multiple times during the course of the outbreak. 2) Bring in regulatory officials to provide outreach presentations. 3) Create and distribute summary publications to all employees. 4) Create and

distribute documents listing biosecurity measures to employees. 5) Distribute information letters to all employees describing the disease outbreak and precautions that they could take as individuals. 6) Discourage employees from visiting other bird or bird product facilities (e.g. pet stores, feed stores, etc).

3. All the animals / birds should be observed at least twice in a day, any one showing signs of sickness should be immediately investigated and attended by a qualified veterinarian. On suspicion of a possible involvement of a contagious disease, the ailing animal /bird should be segregated in isolation room/premises where visitors' and other animals'/ birds' entry is banned.
4. All the animals /birds should be provided with diet that is healthy and certified safe. It is not considered a good practice to utilize the leftover feed from one cage/house to be added in another one.
5. The practice of offering feed to migratory birds has been noticed in some zoo establishments. Technically it is to be discouraged, however, if it has to be continued in the public interest for attracting more migratory birds for public viewing, the feed should be offered at a distance away from the area of captive birds and water bodies.
6. They should be regularly vaccinated as specified by zoo authorities in consultation with DADF as per their schedule. For the ectoparasites and endoparasites scrupulous control programs should be strictly followed at stipulated intervals.
7. The management should make a note of following points regarding cool, clean and safe potable water that should be available *ad-lib* in clean utensils.
 - Need to check the source of water supply-
 - a. The overhead or ground level tanks – Must be covered.
 - b. Supply line to individual rooms/sheds/pens-should ensure no leakage and away from drainage.
 - c. Water troughs/buckets/pots- should not be allowed to share by peri-domestic birds like sparrows, crows, pigeons etc. Ideally the feed/water troughs should be kept at a place that has a net covering so that other birds would not have access for feed /water.
 - Safe source of food supply – In addition to a balanced ration with adequate fiber contents and nutrition for the zoo animals/birds, the management should also ensure the feed storage place free of rodents, insects or dog/cats so that safe and uncontaminated feed is reached to cages/houses.

- Scientific method of waste management – Sanitation and hygiene is to be followed; disposal should not attract the birds, predators or scavenger animals, flies and other insects or other animals.
8. Disease status and proximity to animals in the surrounding area – Captive birds/animals in zoo should not have sharing boundary with other animal /bird enclosures /presence of wildlife and pest species. Similarly the management must have alertness towards any infectious disease in the area/locality being reported frequently or zoonotic disease potential of any newer infection.
 9. Vehicles, machinery, tools and other equipment moving into the zoo are likely to carry infectious agents.
 - a. Materials used as bedding, (straw, litter, sand and gravel), equipment as for carrying animals/birds like hay, crates, boxes or crates, egg trays, empty medicines boxes and containers and other veterinary instruments need to be brought in a separate room, first cleaned, disinfected by spraying or fumigation and then allowed to enter in animal premises.
 - b. The vehicles/ trucks entering in should pass through slowly via a long trench that is filled with disinfection solution in such a way that at least 50 per cent tyres are dipped at a time and when the vehicle rolls through the trench, the wheels should complete at least two rounds (4 half circles) so that the tyres are adequately dipped in the solution.
 - c. Animal waste products of transferred animals in the vehicle it had carried should be disposed off properly.
 - d. The driver of the vehicle should also be treated as visitor and should have all restrictions in place for his movements.
 10. In case in any cage/open space an animal/bird is found dead, immediately it has to be taken out in a leak-proof container/trolley and the area where the animal /bird was lying should be got covered with disinfected. It is always a good practice to vacate that premises completely for sterilization/disinfection.

Specific Biosecurity for Avian Influenza:

Active disease surveillance for Avian Influenza has been well explained for domestic poultry in NAP-AI 2015, however, for zoological parks and other water bodies, different strategy has to be adopted as it includes migratory and wild species of birds that may be carriers of

Avian influenza viruses (AIV) either highly pathogenic or low pathogenic, but may not show clinical disease or mortality. The pathogenic AIV may not kill them but may be transmitted to local ducks/goose/chicken that's where the risk is involved.

1. **Testing of captive birds:** Every zoo must get the cloacal and oro-pharyngeal swab and sera samples from captive birds tested at the start and end of migratory bird season. In case of mortality, the bird carcass should be tested for avian influenza.
2. **Segregation of birds:** Birds need to be segregated species wise and the sick birds need to quarantine under strict monitoring and symptomatic treatment.
3. **Disinfection of premises:** Disinfection of the premises may be carried out in consultation with environmentalist using chemicals or other methods keeping in view of the fragile ecology of the zoos.

During suspected /confirmed AIV (H5 or H7 subtype) outbreaks:

1. If mortality is reported in significant number in any species of birds, quick actions irrespective of protocols need to be taken to avoid losses.
 - a. The sick/dead birds from that site are to be quickly removed, qualified veterinarian be called for investigation and conducting postmortem examination in an isolated closed room.
 - b. The movement of the persons at that site be reduced to minimum and disinfection of the place be properly carried out.
 - c. The testing lab should be alerted on phone and a representative sample/freshly died birds (whole carcass properly packaged as per standard protocol) should be sent by maintaining cold chain with special messenger with complete history. Similarly, DADF and the state Govt AHD as well as State Dept. of Health services should be informed about this suspicious disease.
2. As soon as the disease is confirmed as H5 or H7 Avian Influenza, the actions to be initiated as per NAP-AI-2015, however derogations may be granted for wild /endangered/ precious captive birds not to be killed. Visitors' entry needs to be stopped forthwith.
3. The dead birds should be collected with proper labeling in a strong leak-proof carry bags and kept ready for sanitary disposal.

4. The movement of the persons/vets/laborers should be restricted and in no case they should move from infected pens to healthy pens. The management of the healthy sheds should be done by separate team.
5. Include employee education efforts such as the following measures: 1) Hold general employee biosecurity briefings at multiple times during the course of the outbreak. 2) Bring in regulatory officials to provide outreach presentations. 3) Create and distribute summary publications to all employees. 4) Create and distribute documents listing biosecurity measures to employees. 5) Distribute information letters to all employees describing the disease outbreak and precautions that they could take as individuals. 6) Discourage employees from visiting other bird or bird product facilities (e.g. pet stores, feed stores, etc).
6. All precautions of disinfection and hygienic maintenance of the premises should be observed.
7. The feed and water from the infected sheds should not be allowed to be mixed in common stocks/drainage, should be sterilized if at all needed to be re-used.
8. Even in the absence of mortality in wild/ migratory birds, their movements in the free range/water bodies/ swimming places be stopped and all the birds should be confined in the close premises as far as possible.
9. Since the infection is air-borne, air sanitizers, fogging with disinfectants on the roads/sheds, free spaces should be undertaken.
10. In any case, no vaccinations are to be allowed in the premises, even if the date is due.
11. Cloacal and oro-pharyngeal swabs from all the birds, irrespective of their disease status should be collected, labeled and sent *on-ice* to the reference laboratory to know the involvement of the birds, because many wild bird species do not show the clinical signs or mortality but may be excreting the virus. While collecting samples, movement of the persons should be from healthy pen to infected pen.

Response and Surveillance after Outbreak (RSAO)

1. Emergency risk assessment and formulation of biosecurity plan need to be carried out by a committee comprising of Zoo authority, Environmentalist, Public health professional, Biosecurity expert and Disease experts.
2. As per NAP AI 2015, one km radius zone is an area, where there is complete culling of poultry. Thereafter 10 km zone is for active surveillance. Irrespective of whether the

birds in 1 km epicenter have been culled or otherwise, the 4 locations on North, South, East and west are to be identified and representative samples are to be screened as per NAP AI 2015.

3. In case of wild/ migratory birds, since they may be high value birds/extinct species and not trade subjects, culling is not recommended. Even for captive birds, as they may be precious or extinct species, culling is to be avoided. Only the birds that are seriously ill need to be euthanized.
4. Maximum possible number of birds is to be sampled, while sampling on a water body, birds arriving at different locations be taken into consideration, it should be ensured that different species are proportionately represented.
5. Fresh fecal droppings and wherever possible, cloacal swab/oro-pharyngeal swabs are to be collected with wild/ migratory bird with species identification, (If spot identification is not possible, then a photo of the bird be captured and the same is to be tagged with sample number) are to be collected, labeled properly and sent to the lab as per the sample collection and transport guidelines.
6. In addition to sampling of birds, environment samples like water, soil etc. are to be collected and sent for testing.
7. Sampling has to be repeated every 15 days for at least 4 times and if consecutive two samplings collected from the last positive result found negative then zoo opening may be considered by the competent authority.

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