

**MEETING OF THE STATES PARTIES TO THE  
CONVENTION ON THE PROHIBITION OF  
THE DEVELOPMENT, PRODUCTION AND  
STOCKPILING OF BACTERIOLOGICAL  
(BIOLOGICAL) AND TOXIN WEAPONS AND  
ON THEIR DESTRUCTION**

BWC/MSP/2004/MX/WP.71  
28 July 2004

ENGLISH ONLY

Second Meeting  
Geneva, 6-10 December 2004

Meeting of Experts  
Geneva, 19-30 July 2004  
Item 5 of the agenda

**Animal disease surveillance and control in India with special reference  
to emerging/exotic diseases**

Submitted by India

1. India has a fast growing livestock sector. India ranks first in the world in production of milk, seventh in production of egg and eighth in export of meat. It is projected that by 2020 meat, egg and milk production will increase by 50%, 35% and 25%, respectively.
2. Effective measures to protect animal health through exclusion and containment of existing, emerging as well as trans-boundary or exotic animal diseases is a prerequisite for sustained livestock production. Also, there is a growing threat of use of biological agents by terrorists to deliberately cause animal diseases in order to destroy animal wealth and to cripple the economy of a country.

**Existing diseases**

3. A number of animal diseases are found in India. Among the significant ones are foot and mouth disease, blue tongue, infectious bovine rhinotracheitis, haemorrhagic septicemia, black quarter, anthrax, tuberculosis, paratuberculosis, rabies, sheep and goat pox, equine influenza, new castle disease, fowl pox, marek's disease, infectious bursal disease, egg-drop syndrome, infectious bronchitis, avian infectious anemia, infectious hydro pericardium, reo-viral arthritis, inclusion body hepatitis etc. Some of these diseases have entered the country through import of animals, birds and biologicals.

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### **Emerging diseases**

4. There have been several outbreaks in various regions of the world of new and emerging diseases like bovine spongyform encephalopathy (BSE), paramyxovirus infection in horses (Hendra) and pigs (Nipah) and zoonotic H5N1 avian influenza. Recent reports of H5N1 avian influenza virus crossing the species barriers and infecting humans, pigs, cats and tigers have caused alarm world-wide. This is especially true for pigs that have strong genetic similarity to humans. Fortunately, India has remained free from these diseases. Although peste des petits ruminants (PPR) is known to occur in small ruminants (sheep and goat), its emergence in India became known only after the eradication of rinderpest (RP) in 1997. It has caused considerable loss to the farmers all over the country. Though no vaccine is as yet available commercially, it is being developed.

### **Exotic diseases**

5. There is always a risk of introduction of new diseases/pathogenic organisms into a country causing serious animal health problems in terms of mortality and morbidity. Exotic (non-native) pathogens, once introduced into a country, can escalate into an epidemic due to the absence of vaccine or effective drugs, lack of resistance in host animals and limited resources to diagnose and restrict the spread of these pathogens. Hence, there is a need to take extra precaution in import of animals infected with such pathogens. India is fortunate that it has remained, as per OIE report, free from as many as 43 exotic diseases of livestock.

### **Disease surveillance and reporting**

6. The protection of animal health is the responsibility of State Governments. However, the Central Government plays a key role in formulating broad based policies to increase animal productivity, including control of diseases which are of national importance. Local veterinary hospitals carry out syndromic surveillance of diseases and report to the district veterinary authorities who, in turn, report to the State authorities. The State Animal Husbandry Directorate compiles the disease surveillance data made available by the district veterinary authorities and reports to the Department of Animal Husbandry and Dairying, under Ministry of Agriculture. Information on disease occurrence is subsequently passed on to the OIE for reporting at international level.

### **Diagnosis and control**

7. Department of Animal Husbandry and Dairying is responsible for coordination and control of animal diseases at national level. In addition, it is vested with powers of enforcing laws related to animal disease control including import and export of animals, animal products and biologicals, and quarantine regulations.

### **Laboratory facilities**

8. Laboratory facilities are available at state, regional and national levels to diagnose and control both existing and emerging animal diseases. Each State has a disease diagnostic laboratory to cater to the needs of that State. Department of Animal Husbandry and Dairying has recently

established four regional disease diagnostic laboratories. In addition, a veterinary biological/vaccine testing facility is being set up. Apart from laboratories at the state and regional levels, there are referral diagnostic facilities, including national and regional laboratories with advanced facilities. The Animal Science Division of the Indian Council of Agricultural Research (ICAR) is responsible for animal disease research, diagnosis and their control. The Indian Veterinary Research Institute, one of the institutes set up by ICAR, has 4 regional laboratories. In addition, there are 28 veterinary colleges, which have adequate facility for research and diagnosis of animal diseases. Since these colleges are located in different States they cater to the needs of the respective States for disease diagnosis.

9. A High Security Animal Disease Laboratory, a containment laboratory of Bio-safety Level-4 (BSL-4) with state-of-the-art facilities, was established at Bhopal in 1998. It is safe for handling high risk (risk group- IV) and exotic animal pathogens. And, it has been authorized by the Central Government to diagnose and suggest suitable control measures for exotic and emerging animal diseases.

#### **Research and diagnostic facilities**

10. The High Security Animal Disease Laboratory at Bhopal is involved in diagnosis and control of exotic and emerging animal diseases. It is well equipped for research and diagnosis of diseases using conventional and latest molecular biological techniques. The scientific manpower is well trained and adequate. Technology is available for diagnosis of exotic diseases using OIE recommended tests and latest molecular techniques like PCR, gene cloning and sequencing. Facilities are also available for monoclonal antibody production against various exotic animal pathogens. In addition, the laboratory has developed recombinant antigen and monoclonal antibody based competitive ELISA kits for diagnosis of bovine viral diarrhoea and bovine immunodeficiency. The later is the first diagnostic kit of its kind in the world. The laboratory has also developed competency for diagnosis of anthrax using conventional and molecular biological techniques.

11. Presently, projects are being undertaken for research and diagnosis of avian influenza, rabbit haemorrhagic disease, bovine viral diarrhoea, bovine immunodeficiency, aujeszky's disease, porcine reproductive and respiratory syndrome, transmissible gastroenteritis, African swine fever, malignant catarrhal fever, caprine arthritis and encephalitis. While undertaking research and diagnosis on these diseases, aujeszky's disease, bovine immunodeficiency and malignant catarrhal fever have been diagnosed by serology, PCR and gene sequencing. These diseases are yet to be confirmed by isolation of the etiological agents. Base line data generated over the last five years have indicated the absence of highly pathogenic avian influenza, rabbit haemorrhagic disease, porcine reproductive and respiratory syndrome, transmissible gastroenteritis and African swine fever.

#### **Avian influenza**

12. In spite of the fact that several Asian countries are affected with H5N1 subtype of the virus, also pathogenic to humans, no case of highly pathogenic avian influenza has been detected in India. India has so far remained free from avian influenza because of the prompt action taken by the Government through the ban imposed on import of poultry, poultry products and biologicals.

Besides, international borders were sealed and strict surveillance was carried out in states adjoining international borders.

13. The High Security Animal Disease Laboratory played a vital role in preventing the entry of avian influenza to the country. In 2001, it diagnosed highly pathogenic avian influenza (H7) in imported pigeons and, thereby, prevented the entry of this disease to India. Since then surveillance work on avian influenza has been carried out all over the country and more than thousand birds from different parts of the country, including western and eastern states, have been tested so far. The laboratory is well equipped for diagnosis of avian influenza using OIE recommended tests including pathogenicity test and sub-typing of the virus. Facilities are also available for sequencing of the viral genomes.

14. In 2001, rabbits imported into the country for breeding program were diagnosed for rabbit hemorrhagic disease and their destruction during the quarantine period saved the country from the ingress of this disease.

#### **Future strategy**

15. In future, the progress in animal disease surveillance, diagnosis and containment will largely depend on the development of more accurate laboratory tests. The enormous progress in biomedical science, including that in biotechnology, during the last two decades, has made the development of novel tests possible. However, harmonization of test methodologies is necessary for uniformity in diagnosis and control measures.

16. India is developing diagnostic technologies for exotic diseases, which might pose a threat to it. Steps are also being taken to disseminate technology in advance areas of disease diagnosis and control to the laboratories and facilities at various levels in the country. India is in a position to handle emergencies caused by the appearance of a potentially disastrous animal disease or even suspicion of the existence of such a disease. Organizational structures to enact statutes and provide directives necessary to contain such situations has been a priority of the Government. The country is committed to establish a comprehensive national campaign for diagnosis and control of emergency diseases similar to that developed for the control of rinderpest, foot and mouth disease and avian influenza.

#### **International cooperation**

17. As national capabilities vary from country to country, there is a vast scope for international cooperation and collaborative approaches among countries in addressing regional animal disease problems, including sanitary and phyto-sanitary measures and control systems, to cope with these problems.

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