Preventing and preparing for animal health emergencies in the Far East

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Summary
The advantageous geographical location of Member Countries of the Office International des Epizooties in the Far East (often islands or peninsulas) provides better isolation than that of countries with terrestrial frontiers. However, in the light of the explosive foot and mouth disease (FMD) outbreak which occurred in Taipei China in 1997 after nearly 70 years of freedom from FMD, countries in the Far East were alerted to the fact that while countries can be physically far or isolated from the rest of the world, they do not necessarily remain protected from epidemics and consequently need to be aware of effective methods of management of animal health emergencies.

Countries in the Far East reviewed national management policies from the viewpoint of organisational structure, surveillance system, diagnostic service, vaccine stock, funding, legislation etc., and reconstructed these policies to ensure they were better organised to prevent and control malignant diseases, such as FMD, in the case of an emergency.

With the accelerating and increasing movement of animals and animal products internationally, countries in the region met in Tokyo in April 1998 to discuss preparedness and management of animal health emergencies.

Keywords

The Far East

Member Countries of the Office International des Epizooties (OIE) in the Far East, which have the advantage of being islands or peninsulas, hence benefitting from epidemiological isolation, were alerted by the outbreak of the foot and mouth disease (FMD) in Taipei China in 1997. Although countries can be physically far or isolated from the rest of the world, they are not necessarily protected epidemiologically against animal health emergencies. Following the FMD outbreak in Taipei China, the countries and neighbouring countries in the region met in Tokyo and discussed preparedness for emergencies on the initiative of the OIE Regional Representation for Asia and the Pacific in Tokyo (13).
and adequate to conduct diagnosis of exotic diseases such as FMD).

At the prefectural level, the livestock division of each prefecture is responsible for co-ordinating overall livestock husbandry matters related to administration and including animal health. Local animal health activities are implemented by 195 animal hygiene service centres, with about 2,000 veterinary inspection officials in 47 prefectures (7).

Foot and mouth disease and highly pathogenic avian influenza (HPAI), classified as exotic malignant infectious diseases, are notifiable diseases in Japan and in the event of an outbreak, compulsory slaughter and destruction are required by the Animal Infectious Diseases Control Law (1). Veterinary inspection officials usually make farm visits on a day-to-day basis for the purpose of surveillance and guidance. Should an outbreak of any of these exotic diseases be confirmed or suspected, veterinarians are obliged to notify the incident to a local governor. The Minister of Agriculture, Forestry and Fisheries orders prefectoral governors, or prefectoral governors order the veterinary inspection officials, to specifically target surveillance to these diseases in the case of an outbreak in countries closely related to Japan.

Management of emergency situations in the case of new outbreaks (organisational structures at provincial and national levels)

A manual for exotic malignant infectious diseases, established on the basis of the Animal Infectious Diseases Control Law by the Ministry of Agriculture, Forestry and Fisheries, provides guidelines for first-aid control measures to be adopted by field veterinarians who detect and notify the incidence of any exotic diseases (1, 4). The manual also stipulates official control measures to be implemented by prefectoral veterinary inspection officials to help them respond and conduct the necessary measures against these diseases immediately and appropriately. Measures provided by the manual include slaughter, destruction of carcasses at the place of origin, movement control, establishment of a quarantine area around an infected farm, and storing and use of FMD vaccine for emergency purposes.

Provincial and national diagnostic services

Veterinary inspection officials conduct clinical inspections in the field when they detect a suspected case during day-to-day farm visits or if they are informed of an incident by a veterinary practitioner or an owner of an animal. When the results of clinical inspection cannot rule out the possibility of FMD presence, samples are immediately collected and sent to the NIAH for definitive diagnosis. The NIAH is well-prepared for initiating diagnosis instantly when informed of a suspected case. Diagnosis is conducted by complement fixation, enzyme-linked immunosorbent assay, polymerase chain reaction and/or virus isolation.

Availability of vaccines

A total of 300,000 doses of FMD vaccines are purchased annually and stocked for emergency use. In the light of the outbreak of FMD in Taipei China, about two million additional doses were purchased in 1997.

No vaccine against HPAI is available because control is dependent entirely on stamping-out measures.

Availability of funds for emergency use

The Animal Infectious Diseases Control Law stipulates that the Government shall bear the expenses required for the prevention and control of the diseases carried out in accordance with the Law; usually the expenses are allocated within the ordinary budget (1). Emergency cases, such as outbreaks of FMD, may justify additional allocations from the budget for emergency use.

Legislation (compulsory reporting, movement control, stamping-out)

Compulsory reporting, movement control, stamping-out of infected animals are referred to in the Animal Infectious Diseases Control Law (1).

Both FMD and HPAI are classified as notifiable diseases requiring compulsory slaughter and destruction of animals. When veterinarians and owners of animals detect animals which are infected or suspected of being infected with a notifiable disease, they are obliged to report without delay to a prefectoral governor, who retransmits the information received to governors of neighbouring or epidemiologically related prefectures and to the Ministry of Agriculture, Forestry and Fisheries. The governors inform people concerned with animal health (e.g. veterinary inspection officials and mayors of cities close to the location of the outbreak in their own prefectures) and the Ministry informs all 47 prefectoral governors of the incident.

The Minister and prefectoral governors are authorised to prohibit or restrict the movement of animals, animal carcasses or articles which have the potential to disseminate the causative agents in order to control the spread of the disease. In the event of the occurrence of a malignant exotic disease, such as FMD, the governors are authorised to quarantine places in which infected animals or animals suspected of being infected are located. In addition, the governors are authorised to suspend or restrict the organisation of meetings where animals are brought to gather, such as horse races, livestock markets, cattle shows, etc. (1, 4).

Owners of animals which are infected or suspected of being infected with FMD or HPAI are obliged to slaughter the animals and to destroy the carcasses of these animals without delay, in accordance with the requirements stipulated in the Ministerial Ordinance concerning burning or burial. Indemnities are paid to owners for the loss of animals and for the cost of the burning or burying carcasses.
Republic of Korea

Surveillance systems (organisational structure)

The Animal Health Division of the Ministry of Agriculture and Forestry is responsible for the prevention and control of infectious animal diseases at the national level. As part of the Ministry, the National Veterinary Research Institute (NVRI) supports the disease control activities through research and development. The diagnosis of exotic diseases such as FMD or HPAI is conducted in the NVRI biosecurity facility. Another veterinary organisation which is also under the responsibility of the Ministry is the National Animal Quarantine Service (NAQS) which conducts animal and animal product quarantine and inspection to prevent the introduction of disease. To optimise efficiency, the NVRI and NAQS were amalgamated on 1 August 1998 to form a new agency called the National Research and Quarantine Services.

At the provincial livestock division level, the provincial government is responsible for the monitoring and control of disease. The 49 provincial animal health laboratories (four to five laboratories in each province) conduct 'front-line' monitoring of diseases by clinical, pathological and serological surveys and meat inspection. In addition, the heads of provincial animal health laboratories hold disease surveillance meetings which convene designated accredited veterinarians, representatives of organisations of local farmers and Government officials.

Management of emergency situations in the case of new outbreaks (organisational structures at provincial and national levels)

In accordance with the exotic disease emergency control guidelines based on the Livestock Epidemics Prevention and Control Act, owners of diseased or suspected animals, or veterinarians who diagnose disease in such animals, are required to report to a field veterinary official (6).

The field veterinary official who has been notified of an outbreak reports to the provincial governor (or director) and visits the site of the outbreak to restrict the movement of animals without delay. The governor reports to the Minister and notifies the neighbouring governor. The NVRI specialist who receives instructions from the Minister visits the site of infection to collect specimens.

After receiving confirmation of an exotic disease, such as FMD or HPAI, eradication procedures are initiated immediately by the field unit headquarters under the authority of the governor. The OIE will be informed immediately by the disease control headquarters established by the Minister.

To evaluate the emergency system, a command post exercise (CPX) for FMD is performed every two years.

Provincial and national diagnostic services

The collection of specimens of vesicular diseases is restricted to NVRI specialists. The biosecurity facility in the NVRI also conducts tests for FMD. All other diseases, except HPAI, can be diagnosed at the provincial animal health laboratories.

Availability of vaccines

An average of 100,000 doses of FMD vaccine are stored (10). Furthermore, 200,000 doses were added at the end of 1998. In addition, the animal health services have decided to participate in the antigen bank in which about two million doses of FMD vaccine will be produced in the case of an emergency.

Availability of funds for emergency use

The sum of at least US$500,000 is allocated in the national budget for emergency use. In the case of FMD outbreaks, the Minister can allocate additional funds from other budgets, such as the emergency recovery budget (6, 10).

Legislation (compulsory reporting, movement control, stamping-out)

The Livestock Epidemics Prevention and Control Act stipulates the compulsory reporting, movement control and stamping-out for notifiable diseases (2, 3). FMD and HPAI are classified as notifiable diseases according to the Act.

The owner of a diseased animal and the veterinarian who diagnoses the animal have to report to the mayor of the city immediately.

The governor is responsible for ordering restriction of movement of the diseased animals or the transit of animals within the outbreak area.

Taipei China

Taipei China had been free from FMD for over 68 years before the disease occurred in March 1997. The only virus strain isolated was type O. Based on the experiments conducted by the World Reference Laboratory for Foot and Mouth Disease of the OIE in Pirbright (United Kingdom), the isolate was identified as a pig-adapted virus which will not infect cloven-hoofed animals other than pigs (12). This virus type also exists in some countries in Asia.

Distribution of the HPAI virus is world-wide and the virus is commonly recovered from apparently healthy seabirds and migratory waterfowl which are the potential sources of outbreaks. As Taipei China is located on the migratory route of waterfowl, monitoring the virus type in waterfowl and seabirds and the antibody titres in chickens and conducting various epidemiological investigations are crucial. These activities have been conducted since 1980 and are aimed at identifying the existence of HPAI and the possible source of infection as early as possible.
To date, Taipei China has been confirmed to be free from HPAI and FMD viruses, except FMD virus type O (9). Therefore, these diseases are considered exotic. Every effort should be made to prevent the introduction of such diseases to Taipei China.

Surveillance systems (organisational structure)

The Animal Health Division of the Council of Agriculture (COA) is responsible for the administrative work of animal disease monitoring, surveillance, prevention, control and eradication, as well as animal quarantine, at the national level. The implementation of all activities related to the above items throughout the country is based on regulations and budgets provided by the COA.

The Taiwan Animal Health Research Institute (TAHRI) is responsible for the confirmation of diagnoses of every notifiable animal disease, especially exotic diseases. The Institute also conducts research activities on the development of disease diagnostic techniques, disease monitoring, surveillance, control measures, etc. Veterinary schools at the university level and other related research institutes are assisting the TAHRI to execute its responsibilities.

Livestock Disease Control Centres (LDCCs) located in every prefecture/city are responsible for primary animal disease diagnosis, implementing animal disease prevention and control measures, and emergency control measures in the case of the occurrence of an outbreak of any notifiable diseases.

Epidemiological monitoring and surveillance activities are crucial for understanding the real status of diseases. In the case of FMD, blood samples are collected routinely from slaughterhouses to monitor the antibody titres in slaughtered pigs. Vesicle fluid and blood samples are collected from infected farms to determine whether or not a new virus type has been introduced. The result of the blood test not only provides the general picture of immune status but also demonstrates the possible circulation of the virus. In the case of HPAI, blood and faecal samples from poultry and migrating waterfowl have been collected since 1979. Samples collected from pigs and birds were sent to the TAHRI for antibody testing or virus isolation and identification, especially for exotic diseases. Tracing back to the farms can then be made.

Management of emergency situations in the case of new outbreaks (organisational structures at provincial and national levels)

A guideline for emergency control of exotic animal diseases, such as FMD and HPAI, has been established to allow field veterinarians to deal with these diseases when they occur. Measures provided by this guideline include standardised disease diagnostic procedures, disease reporting procedures, movement control procedures in and around the quarantine areas, disinfecting procedures, slaughter and destruction procedures, etc.

To allocate manpower and resources and to ensure the execution of the contingency plan for the prevention or eradication of exotic diseases such as FMD and HPAI, the local governments (e.g. provincial and prefectural governments) have organised working groups at each appropriate level. Members of each working group are designated depending on the purpose, activities and responsibilities required. The working groups of the central and provincial levels are required to monitor the activities and progress of the disease prevention, control or eradication procedures and to solve any problems which may have arisen at lower levels.

Provincial and national diagnostic services

Once a livestock producer reports to the LDCC that the animal raised on his farm has a health problem, a veterinarian from the LDCC is required to visit the farm immediately to examine and/or perform an autopsy of the sick animals and collect samples for further examination. Samples collected from the farm either by the LDCC veterinarian or by a private practitioner, are processed in the LDCC laboratory. Samples from suspected cases of FMD, HPAI or other exotic diseases have to be sent to the TAHRI for virus isolation, identification and/or serological testing.

Standardised procedures for the diagnosis of the important animal diseases have also been established to ensure that effective field results are obtained.

Encouraging producers to report disease occurrence and suspected cases on their farms to LDCCs will be helpful in identifying the existence of health problems and exotic disease. These activities are also compulsory in Taipei China. Should any producer fail to do so, he will be fined and compensation for the animal destroyed will not be paid.

Availability of vaccines

Vaccination policies and the slaughter of infected, suspected and possibly infected pigs are measures which have been adopted in Taipei China. A regulation entitled *Kinds of vaccines and their management* was promulgated on 10 September 1997 (5). A pig ear-tag system was introduced in the field in accordance with that regulation. Since December 1997, every pig must carry an ear-tag when vaccinated with FMD and classical swine fever (CSF) vaccine. As of 1 August 1998, no piglet can move from one farm to another without an ear-tag. This regulation has been successful in obliging pig producers to vaccinate their pigs at the appropriate time. The major purposes for introducing the ear-tag system are as follows:

a) to identify the pig in question, whether or not it has been vaccinated with FMD and CSF vaccine

b) to determine the exact number of pigs raised in a particular area and month.

If every pig is vaccinated with FMD and CSF vaccine for a certain period, those diseases should both be eradicated.
Based on the extreme difficulties encountered in obtaining large quantities of FMD vaccine within a very short period, the authorities have decided to join the FMD antigen bank. Three types of FMD antigen, namely: A\textsubscript{22}, C\textsubscript{4} and Asia 1, have been included and the quantity for each antigen is 1.2 million doses.

**Availability of funds for emergency use**
To monitor the existence of exotic diseases, such as HPAI, or to eradicate existing exotic diseases, such as FMD, various programmes are developed by the COA each year.

Most of the expenses for training programmes for producers and veterinarians, disinfectants used for auction markets and slaughterhouses, compensation for animals destroyed, disease diagnosis, epidemiological investigations and the above-mentioned programmes are provided by the COA.

**Legislation (compulsory reporting, movement control, stamping-out)**
Each province and prefecture has operational responsibilities for the control and eradication of animal diseases, whether or not the disease is endemic or exotic under the Statute for prevention and control of animal diseases 1996 (8). Measures and procedures for disease prevention and control, eradication, quarantine and provision of logistic support are included in this Statute.

**Conclusion**
The explosive outbreak of FMD in Taipei China has proved that all countries, including those with a long history of disease freedom, cannot rule out the possibility of an exotic disease being introduced. To ensure more effective prevention and control of infectious animal diseases, it is of the utmost importance that information is exchanged on a bilateral and multilateral basis among all members in the region. As a complement to OIE initiative and co-ordination in this field, reviews of animal health systems need to be made in a rapid and flexible manner to ensure that a rapid response is made as soon as the health status of a country in the region changes.

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**Prévention et préparation aux urgences zoosanitaires en Extrême-Orient**

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**Résumé**
En Extrême-Orient, la situation géographique de certains pays (souvent des îles ou des péninsules) membres de l'Office international des épizooties offre l'avantage d'un meilleur isolement que les États possédant des frontières terrestres. Toutefois, après l'apparition brutale d'une épidémie de fièvre aphteuse à Taipei China en 1997 faisant suite à près de 70 ans d'absence de cette maladie, les pays d'Extrême-Orient ont compris que tout en étant physiquement éloignés ou isolés du reste du monde, ils n'étaient pas nécessairement à l'abri des épidémies et qu'ils devenaient donc se doter de méthodes efficaces de gestion des urgences zoosanitaires.

Certains pays d'Extrême-Orient ont donc repensé leurs politiques nationales en la matière, sur le plan de la structure organisationnelle, du système de surveillance, des services de diagnostic, des réserves de vaccins, du financement, de la législation, etc., de manière à mieux prévenir et combattre des maladies graves telles que la fièvre aphteuse, en cas d'urgence.
Prevención y preparación para las emergencias zoosanitarias en Extremo Oriente

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La privilegiada situación geográfica de los Países Miembros de la Oficina Internacional de Epizootias del Extremo Oriente (a menudo islas o penínsulas) les proporciona un nivel de aislamiento superior al de países con fronteras terrestres. Sin embargo, el tremendo brote de fiebre aftosa que sufrió Taipei China en 1997, tras casi 70 años de estar libre de la enfermedad, enseñó a los países de Extremo Oriente que el aislamiento o la lejanía física de un país respecto al resto del mundo no siempre bastan para protegerle de las epidemias, y que por lo tanto siempre es necesario disponer de sistemas eficaces para la gestión de emergencias zoosanitarias.

Tras replantear sus criterios nacionales de gestión desde diversos puntos de vista, entre ellos la estructura organizativa, el sistema de vigilancia, los servicios de diagnóstico, las reservas de vacunas, la financiación o la legislación, los países de Extremo Oriente reformularon dichos criterios con el fin de dotarse de una organización más adecuada, capaz de prevenir y controlar enfermedades malignas, como la fiebre aftosa, en caso de emergencia.

Ante el intenso y creciente tráfico internacional de animales y productos de origen animal, los países de la región se dieron cita en Tokio (abril de 1998) para debatir cuestiones relativas a la preparación y la gestión ante eventuales emergencias zoosanitarias.

Palabras clave
References


