

THE DEVELOPMENT OF DISEASE-FREE ZONES FOR EQUINE DISEASES

– INCLUDING THE EXAMPLE OF CHINA –

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Summary: *An examination is made and views are provided on the establishment of free zones for a range of equine diseases for specific events.*

The OIE Terrestrial Animal Health Code provides for official recognition for freedom of certain diseases. Countries can self declare freedom subject to meeting the conditions of the Code for particular diseases. The Code gives guidance on zoning and compartmentalisation, measures that can be adopted by countries to define and manage animal subpopulations of a distinct animal health status. There are no OIE guidelines as yet on the concept of regional freedom for a suite of diseases, which may be desirable for specific events such as the Olympics.

A case study is made of a recent OIE expert mission to examine and provide advice on the establishment of an Equine Disease Free Zone (EDFZ) in Conghua City, Guangzhou, the People's Republic of China in preparation for the 2010 Asian Games. This, together with experiences gained from previous Asian Games and Olympics and Paralympics events, provides useful background and principles for the development of EDFZs.

In view of the social and economic importance of equine animal industry development, recommendations are made on the establishment of EDFZs for specific events. As this is a complex issue, it is also recommended that OIE offer to send expert missions to countries should they so request to assist them in developing EDFZs. Finally it is recommended that countries engage fully in the OIE Programme for Strengthening Veterinary Services based on the OIE Tool for the Evaluation of Performance of Veterinary Services (OIE PVS Tool).

Key words: Asian Games 2010 – equine disease – equine disease free zone – OIE standard – OIE PVS Tool – zoning model

1. Background

The World Organisation for Animal Health (OIE) has official freedom recognition procedures for foot and mouth disease, contagious bovine pleuropneumonia, bovine spongiform encephalopathy and rinderpest. The procedures for official recognition can be found on the OIE website².

For all other diseases, freedom is based on self-declaration if the country can provide sufficient evidence — as provided in the relevant Chapter of the OIE *Terrestrial Animal Health Code* (the *Code*)— to substantiate its claims. Claims for both official and self recognition procedures can be on a country or zonal basis under a range of categories; for example in the case of foot and mouth disease, freedom without vaccination or freedom with vaccination, at country or zonal levels.

In addition to zoning, the OIE has introduced the concept of compartmentalisation into the *Code*. Zoning and compartmentalisation are approaches that can be adopted by countries within their jurisdictions to define and manage animal subpopulations of distinct animal health status. Such approaches must be consistent with the *Code* standards and are tools that can be used to support the prevention and management of disease at the national and regional levels as well as marketing and international trade.

Generally speaking, zoning is defined on a geographic basis, while compartmentalisation applies to an animal subpopulation where management and husbandry practices assure sound and effective biosecurity practices are in place. In practice, components of zoning and compartmentalisation apply to each other.

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² http://www.oie.int/eng/info/en_procedures.htm

Implementation of zoning and compartmentalisation arrangements can be complex and require a wide range of technical, programme management and biosecurity measures to succeed. Of critical importance is the effectiveness of veterinary services, political support, engagement of industry and key stakeholders, and the provision of adequate resources.

The current OIE approach for the official recognition of specific equine diseases is for the OIE Scientific Commission for Animal Diseases to evaluate the scientific framework, including the suitability of available diagnostic tests, provisions in the *Code* chapters, epidemiology of the disease under question and the like, and work progressively starting with African horse sickness and glanders.

The OIE has not, as yet, sought to develop standards for regional freedom from a suite of diseases. It has however organised expert missions to assist the People's Republic of China (PRC) prepare for the 2008 Beijing Olympics Equestrian Events and to provide technical advice on proposals to establish specific Equine Disease Free Zones (EDFZ) in Guangzhou and Nanjing.

The Guangzhou exercise is used as a case example to describe the development of an EDFZ. Based on the lessons and learning experiences, recommendations are made that would allow OIE to take forward the novel concept of providing for the recognition of a number of equine diseases under specific situations.

2. Case study – Planning approaches for an EDFZ, Conghua City, Guangzhou

Following discussion between the Fédération Equestre Internationale (FEI) and the OIE, the Government of the PRC invited the OIE to send an expert mission to advise on the construction of EDFZs in Conghua City, Guangzhou, and Nanjing, with the objective of supporting national and international equestrian events by ensuring the sound health status of competition horses.

The mission¹ visited China from 30 November till 7 December 2008. This case study deals only with the Guangzhou component of the visit, the specific objectives being to examine and advise on planning approaches for an EDFZ in preparation for the Asian Games equestrian events scheduled to be held in November 2010.

Of particular importance was the need to ensure that the competing horses would pose minimal if any risk to the local horses —and vice versa, and that they will be accepted and returned to other parts of China and overseas countries after the competition.

2.1. Methodology

The main features of the methodology used by the mission were as follows:

- Correspondence and familiarisation of the project by e-mail and —where possible— face-to-face discussion before the mission.
- An examination of relevant equestrian events such as the Beijing (Hong Kong), Atlanta, Athens and Sydney Olympics as well as previous Asian Games in the Republic of Korea and Thailand.
- The preparation of an agreed Questionnaire sent to and completed by the Chinese Veterinary Authorities.
- Studies of the geography of the area, visits to sites, laboratories and the like.
- Comprehensive meetings with a range of governmental and non-governmental people including —but not confined to— representatives of the PRC Government in Beijing and Guangdong Province; the Hong Kong Jockey Club; the Agriculture, Fisheries and Conservation Department of the Government of Hong Kong Special Administrative Region; the People's Republic of China Government of Guangzhou Municipal City and Guangdong Province Officials; the Chinese Equestrian Association; the Beijing Organizing Committee for the Games of the XXIX Olympiad, as well a range of other officials, experts, and private sector people.
- Presentation of and open hearings on preliminary findings with feedback that was taken into account when finalizing a report for OIE and the PRC.

1 The members of the OIE expert mission were: Dr Gardner Murray, Team Leader; Dr James Pearson, Consultant, USA; Dr Alf-Eckbert Füssel, European Commission; Dr Robyn Martin, Biosecurity Australia; and Dr Tom Morton, representative of FEI, ably assisted by Dr Sun yan, Director-Consultant, Veterinary Bureau, Ministry of Agriculture, People's Rep. of China; and Dr Kenneth Lam, Veterinary Officer, Hong Kong Jockey Club

Sound preparation and planning were seen as critical success factors for the mission and allowed for a more productive, transparent and inclusive approach. Further, this enabled the wide range of issues described below to be properly canvassed and analysed.

2.2. Equine diseases of interest

Diseases considered important in the context of the construction proposal were: African horse sickness, equine infectious anaemia, glanders, Japanese encephalitis, equine piroplasmiasis, equine viral arteritis, dourine, surra (*Trypanosoma evansi*), equine influenza, vesicular stomatitis (VS), Nipah virus disease, West Nile virus disease, and Hendra virus disease.

Given that pigs, cattle and goats were present in the general area and can 'share' certain diseases with horses, it was considered important that the status of Japanese encephalitis, surra, VS and Nipah virus disease in pigs, and surra and VS in cattle and goats, be understood.

2.3. The zoning model and animal movement

To support effective biosecurity and based on geographical, functional and animal population densities (equines, pigs and ruminants), an EDFZ comprising a core of 5-km radius and surveillance zone was recommended. The Core Zone consists of an enclosed Conghua equestrian competition site, and the surveillance zone comprises all administrative divisions of Conghua City except the Core Zone. Surrounding the EDFZ is a Protection Zone that includes the 18 surrounding districts of Guangzhou City.

It is intended that the site of the Equestrian Centre inside the Core Zone be fully fenced or enclosed to prevent unauthorised entry or wildlife intrusions. Natural geographic features including mountains, river and a hilly terrain provide a high level of isolation. No horses are allowed into the Core Zone until the Asian Games.

The Surveillance Zone occupies an area of 2,009 km². No equine animals are allowed in the zone. Animal population surveys revealed small numbers of swine and ruminants. The locations of these animals are registered by the local veterinary authorities.

The Protection Zone has a limited number of horses whose locations are known and registered. As for the Surveillance Zone, holdings that have pigs and ruminants are registered by local veterinary authorities.

Control and an understanding of livestock and product movements are essential to effective biosecurity. Movements of domestic equine animals, other livestock, as well as biological materials, into the EDFZ are only allowed by permit and subject to quarantine requirements. Supporting this are signage, three quarantine check point controls and random monitoring to prevent unauthorised entry into the Core Zone.

Movement of international horses from the Asian Games will be transferred directly from the point of arrival to the equestrian site via a highway biosafety passage system connecting the main airports at Guangzhou and Shenzhen as well as the Hong Kong border with an Equine Exclusion Zone Corridor of 1 km on either side.

2.4. Surveillance and contingency disease planning

Surveillance is essential to provide a profile of equine, swine and ruminant health status.

Serum samples from horses were tested for antibodies to the diseases listed above, except in the case of VS where PCR tests on nasal swabs were carried out. A total of 341 out of the 413 equine animals resident in the district of Guangzhou were tested and 5 found positive for equine infectious anaemia (EIA) and 4 for equine viral arteritis (EVA). These animals were destroyed. A total of 14 horses tested positive for antibodies against equine piroplasmiasis and were isolated and treated. In the case of the EVA seropositive horses, alternative actions could have been considered since geldings and mares with a stable antibody titre—which may, in some cases, be due to vaccination—do not pose a risk to other horses.

A total of 4,315 pigs tested negative for surra, VS and Nipah virus disease. 40% had antibodies to Japanese encephalitis but this was considered reflective of vaccination titres as there were no reported clinical signs and as PCR results on nasal swabs were negative.

A total of 365 ruminants (cattle and goats) tested negative for surra and VS.

This profile provides a solid baseline that will enable the nature, scope and timing of future surveillance activities. Based on risk, optimal surveillance programmes can be designed taking into account the diseases known to occur in the wider region and the requirements of countries sending horses to the Asian Games. An important issue is to develop policies proportionate to risk when positive cases are found.

The Chinese Authorities planned to commence an insect vector study in 2009 that would complement a wildlife survey that began in November 2008 and is due to be completed in 2009. The information gained from these—as well as animal population—surveys will facilitate the development of disease prevention and control plans.

Even under the best managed systems, problems can occur and therefore emergency disease planning is essential. Practical experience was gained through avian influenza control and eradication activities in Guangzhou during two outbreaks in 2007 and 2008. A plan to conduct a simulation test exercise for the Asian Games will further enhance preparedness.

2.4. Laboratories, imports and exports

Five laboratories are likely to be involved in surveillance and import testing. These are:

- Guangzhou Animal Health Supervision Institute;
- Guangdong Animal Health Prevention and Supervision Institute;
- Guangdong Entry and Exit Inspection and Quarantine Bureau;
- Harbin Veterinary Research Institute; and
- China Animal Health and Epidemiology Centre.

Such arrangements will require the full cooperation and coordination of laboratory activities to ensure that roles and responsibilities are clearly defined. Test methods should be those as prescribed by the OIE and standardised reagents used and obtained from or exchanged with OIE Reference Laboratories or other recognised international laboratories. Further OIE procedures to confirm questionable results should be adopted, as well as proficiency testing and quality assurance programmes.

Import and re-export protocols including certification for competition horses, must be agreed by PRC Authorities and officials from the countries of origin. The generic model passport for international movement of competition horses, as established within the Chapter 5.12 of the *Code* provides a reference as does the 'Horse Information Document for the Importation of 2008 Olympic/Paralympics Games Equestrian Horse Event into Hong Kong'. Tests for importation into China could be performed overseas but only at laboratories with recognised quality assurance and accreditation programmes in place.

For the purposes of the Asian Games, all horses, including those from China entering the EDFZ, should be of an equivalent health status.

High level quarantine capabilities are seen as essential with, in the case of the Asian Games, support for horses moving directly from entry points to the event venue for post-entry quarantine. A proposal for a pre-entry isolation facility for local (Chinese) horses is a sensible move. There is a need to factor into management plans the provision of separate facilities for animals showing signs of disease and procedures to cover the possibility of horses arriving at border entry points with signs of disease. Plans would also support good animal welfare practices.

2.5. Veterinary infrastructure and standard operating procedures

Veterinary Services were assessed as acceptable for the purpose of developing and maintaining an EDFZ. In this context, Veterinary Services include not only veterinarians, but other scientists, para-professionals, a range of stakeholders, and most importantly a range of elected officials and senior government personnel. Essential policy and programme support at the political and industry level with the provision of adequate resources was and continues to be provided.

Legislation and related support systems are in place to ensure that diseases of equines are subject to official controls and to support disease reporting from the local level. It is recognised that existing skills and infrastructure provide a sound basis for the provision of veterinary services, and staff training and development in areas such as surveillance will be introduced to support the EDFZ.

High-level business planning, coordination and communications arrangements have been introduced for the Asian Games, including the EDFZ. This is essential given the complexities of the undertaking.

Underpinning planning activities is the need for an overall Quality Assurance Plan (QAP) supported by Standard Operating Procedures (SOPs). Detailed and well documented SOPs are integral components of a QAP and would describe in detail how to develop and maintain the EDFZ and provide clear definitions of boundaries, checkpoints, and management procedures. SOPs also provide useful training material but must be subject to monitoring and evaluation on a regular basis to ensure compliance and relevance.

2.6. Mission conclusions

The mission supported the construction scheme and made a number of recommendations for the consideration of the PRC and the OIE to enhance activities in areas such as surveillance, laboratory systems, protocol and certification arrangements, training and staff development and the need for strong monitoring and evaluation.

The mission recommended that the PRC nominate representatives to attend PVS training to improve understandings of methods to strengthen veterinary services. The PRC could usefully consider requesting an official PVS mission.

The mission was impressed with the business and construction planning for the EDFZ. Objectives and timing were clear, with appropriate guarantees, financial and otherwise. The overall management structure and government arrangements will be effective if the ongoing leadership and drive are maintained. In summary, key elements of the approach, which are similar to those used during the Hong Kong Equestrian Olympic and Paralympics events, include:

- Highly effective partnership arrangements between key government organisations;
- Leadership and the drive and energy to push the Project to completion;
- A strong business planning approach with clear timelines for completion of Project activities;
- Political support and adequate resources;
- High-level coordination;
- Strong governance and legislative processes;
- High effective and professional technical services;
- Effective international negotiation skills so that sound, safe and practical protocols and health certification requirements can be developed;
- Effective liaison with relevant horse industries and the Hong Kong Jockey Club;
- Sound training proposals for technical and related staff.

3. Developments

Following submission of the mission report by OIE to the PRC, substantial work has been carried out in areas, such as the development of international health certification protocols to facilitate international movement of horses to the EDFZ.

Of particular interest has been the launching by the Guangzhou Veterinary Bureau of a Guangdong Provincial Equine Database and the micro-chipping of registered horses. This will support the identification of horses on registered premises, traceability, disease control and licit movements.

Given the importance of the PVS Tool, the PRC sent two representatives to participate in an OIE PVS Gap Analysis Training Seminar in Paris from 15 to 17 April 2009.

4. Discussion

The Guangzhou exercise demonstrates that EDFZs can be achieved provided there is strong political, administrative, technical and resource support allied to good leadership. The exercise also showed that the EDFZ combines both OIE zoning and compartmentalisation principles.

Although the initial purpose of the EDFZ construction is to support the Asian Games, a specialised event, it is intended that, following the Games, the facilities be developed as an International Equestrian Centre involving the Hong Kong Jockey Club. This will likely mean the need for ongoing EDFZ status, since horses, people and equipment are likely to continue to move to and from the Zone.

Experience from the mission study, previous Asian Games and Equestrian Olympics and Paralympics events in Hong Kong, Athens, Sydney and Atlanta, would indicate there are a series of guiding principles that can apply to the development of EDFZs for specific events. Such principles, if documented in a publication such as the OIE *Technical and Scientific Review* series for example, would serve as useful reference material and would provide scope for country self-declaration procedures in the growing competition and equestrian events arena.

Documentation supporting self declarations would need to ensure both the use of up-to-date OIE terminology and full adherence to OIE principles and practices. Further detailed discussion and consideration would need to be given to matters such as the prevention and control of vector-borne diseases as well as surveillance activities including passive surveillance, epidemiological investigations and diagnostic procedures and interpretation. In addition, reference should be made to the importance of horse movement certification. Given the complexity of the subject however, the OIE should offer to send expert missions to advise on EDFZs should countries so request. Funding could be provided by the country, industry and other interested donors.

Key to the integrity of an EDFZ and animal health arrangements are sound Veterinary Services, strong veterinary leadership and an effective chain of command. It is strongly recommended that countries learn and understand the OIE PVS approach, request OIE PVS evaluations, PVS gap analysis and PVS follow-up missions.

Postscript¹

A European Commission mission visited China in February 2010, to advise, inter alia, on health certification protocols.

In preparation for the 16th Asian Games, a three-day test event was held at the Conghua Equestrian Venue. On 10 September 2010, 18 Hong Kong resident horses were safely transported from the Sha Tin Racecourse in Hong Kong to Conghua. These activities demonstrated the successful implementation of the EDFZ and the Biosecurity Passage.

The 16th Asian Games Equestrian Events were held successfully at the Equestrian Venue in the EDFZ from 7 to 24 November 2010. A total of 95 horses from 16 countries and regions of equivalent health status participated. Biosecurity arrangements proved successful in enabling the safe arrival and return of all competing horses with no disease outbreaks occurring.

The Hong Kong Jockey Club plans to invest and convert the Equestrian Venue into a new racecourse training centre with frequent movement of racehorses between Hong Kong and the EDFZ. The first phase is scheduled to be operational in 2014. This will create a valuable post-Games legacy, strengthen Pan-Pearl River Delta cooperation, and serve as a platform for longer term sustainable developments.

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1 This postscript was submitted by the author on 25 November 2010