Supplementary material

Management of the national programme to eradicate equine infectious anaemia from Ireland during 2006: A review

Appendix 1: Chronology of events

a. June 2006

During the night of **12 June**, an acutely ill mare *(C1)* from Farm A in Co. Meath was admitted to Veterinary Hospital Y in Co. Kildare. Samples collected during the period of hospitalisation were submitted to the Irish Equine Centre (IEC) for analysis. On **14 June**, this horse was euthanased and the carcase was sent to the Central Veterinary Research Laboratory (CVRL) for post mortem examination. Staff at the veterinary hospital notified Meath District Veterinary Office of the Department of Agriculture, Fisheries and Food (DAFF) of their suspicion that the mare may have died as a result of infection with Equine Infectious Anaemia (EIA).

On Farm A, two foals (later identified as *C3* and *C32*) were reported to DAFF on 14 June as being ill. DAFF directed that samples from these be sent to the CVRL for analysis. Both foals died on 14 June and were submitted to CVRL for post-mortem examination.

Initial inquiries made by DAFF on 14 June gave rise to the possibility that imported hyperimmune plasma, which was suspected to be contaminated with equine infectious anaemia (EIA) agent, had been administered to four foals (later identified as *C3, C30, C31* and *U1*) on Farm A on 1 March.

Using the Coggins test, retrospective testing was conducted on a large number of serum samples submitted to the IEC during May and early June. Serum from *C30, C31* and unconfirmed case *U1* (foals from Farm A that died in early May) were among the samples tested. *C2*, a foal euthanased on Farm B on 25 May, was identified at this time. Farm B, in Co. Meath, was not contiguous, adjacent or otherwise associated with Farm A. Subsequent investigations revealed that two other foals, *C32* and *C33* (also from Farm A) which had died in early June, may have been infected iatraogenically following treatment of the other unconfirmed cases.

Senior veterinary management (Agriculture House Kildare Street, Dublin) were advised, and on the basis of existing legislation (SI 189 of 1975), DAFF instructed the owners of Farm A that movements of animals must be under permit only (essentially a premises restriction). With regard to Hospital Y, non-essential surgeries were cancelled, and cleaning and disinfection was completed.

EIA was confirmed in Hospital Y on **15 June**, in two horses *(C1, C2)* with unrelated home premises, Farms A and B, in Co. Meath. As highlighted previously, *C1* (the dam of *C30*) from Farm A had been held in Hospital Y from 12 to 14 June, whereas *C2*, from Farm B, was a foal that had been euthanased in Hospital Y on 25 May. The infection status of *C2* was discovered following retrospective testing at the Irish Equine Centre of samples from unexplained deaths/illnesses during the 2006 stud season. The same veterinary practice (Practice X) attended both Farms A and B in Co. Meath, and *C2* had also attended Hospital Y as an inpatient in May 2006. A programme of serological testing commenced, using the Coggins test, of all horses on these three premises. In addition, DAFF started a programme to forward-trace horses from Farms A and B and from Hospital Y. Concerning the latter, during defined periods all hospital in-patients and ambulatory patients (horses visited by staff of Hospital Y during ambulatory visits) were identified. Horses were deemed at-risk if treated by a veterinarian within 4 days of the treatment of a positive case. Further, treatments were evaluated on a risk basis, with surgical interventions and the administration of intravenous therapies being considered the highest risk. Other interventions, such as farrier visits and shared transport, were evaluated on a similar basis. On 15 June, the tripartite partners (France, the United Kingdom) were notified of confirmation of EIA. All local offices (DVOs) were also informed and a press release issued.

On **16 June**, *C3* was confirmed in a suspect foal from Farm A, based on samples collected on 14 June. The OIE was notified, and the chief veterinary officers of Italy and the UK were informed of horses forward-traced from Farm A to Italy and the UK, respectively. No international movements had occurred from Farm B. At this time, the initial risk period was established as 1 March 2006 onwards.

On **19 June**, Hospital Y staff wrote to clients advising that all horses present in the hospital at the same time as *C1* or *C2* needed to be retested for EIA after 30 days. At this time, it was DAFF policy that any horse in potential contact with either a positive horse, or an infected premises should be tested immediately, and again at 45 and 90 days. On **20 June**, the UK CVO was notified of forward-traced animals present in Hospital Y at the same time as 2 of the 3 confirmed cases and subsequently moved to the UK.

On **29 June**, Kildare DVO finalised a national contact list, based on hospital admission and discharge dates, of horses present in Hospital Y at the same time as the EIA positive animals. This list was issued to all DVOs for follow up action and testing, with an initial focus on in-patients. The out-patients were followed up later during the outbreak. At this stage, two risk categories were identified, including:

- horses considered at high-risk (hospital in-patients during defined risk periods), and
- horses considered at lower-risk (hospital in-patients at other times).

All high-risk horses were tested at 45 days post potential contact and, if clear, were allowed to move subject to permit until a final test was completed at day 90. Horses at lower-risk were not considered further if they tested negative for EIA. At this point, infected premises were restricted until two negative Coggins tests (90 days apart) were obtained from all horses that remained after the positive animal(s) had been removed. A similar DAFF policy applied to contiguous premises and other restricted premises (two negative Coggins tests 90 days apart, the first being subsequent to discharge or the last potential contact with an infected animal).

b. July 2006

On **5 July**, *C4* (the dam of *C2*) on Farm B was confirmed, based on samples collected the previous day. DAFF's Special Investigation Unit (SIU) became involved in the investigation. On **6 July**, new legislation (SI 359 of 2006) was introduced providing additional powers to veterinary inspectors with regard to control measures, including restriction of all premises with a connection

to EIA infection and of individual horses.

On **13 July**, *C5* (dam of *C33*) from Farm A was confirmed, based on samples collected the previous day. Her foal had received treatment in a time coinciding with the period when foals that had reportedly received hyperimmune plasma were also being treated. This mare had also attended Hospital Y while accompanying her sick foal and was the fourth case to have attended this hospital in the weeks preceding her confirmatory EIA result. The risk period associated with Hospital Y was now extended to include horses, which that had previously been classified at lower-risk.

On **15 July**, *C34* was euthanased. This horse had returned to its home premise in Co. Wicklow from Hospital Y.

The national Centre for Veterinary Epidemiology and Risk Analysis (CVERA) became involved in the investigation on **17 July**. On **19 July**, samples were taken for Coggins testing from a number of horses, including several horses exhibiting EIA consistent clinical signs at Hospital Y. Others were tested as the 30 day period had elapsed. These horses had either remained at or had returned to the hospital but all suspects had been present at the hospital at the same time as previous confirmed and/or unconfirmed cases. Hospital Y closed voluntarily. Thoroughbred sales companies agreed that a negative Coggins test within 30 days of sale would be a requirement for 2006 sales.

On **21 July**, Hospital Y was restricted on confirmation of 3 new cases *(C6, C7* and *C8),* based on samples collected on 19 July. On **22 July**, a decision was taken to restrict the premises of all horses which had been present in either the main or isolation barn of Hospital Y during 13 or 14 June. In addition, any horse restricted for EIA was not allowed to move on permit and would remain restricted for the full 90 day period.

During the week commencing **24 July**, the interval of serological testing for high-risk horses was shortened to 10 days and the ELISA test was introduced in addition to the Coggins test. Further, haematological and biochemical analyses were conducted on these samples until 60 days after the last possible exposure had elapsed. Chuck Issel (Gluck Equine Research Center, Department of Veterinary Science, University of Kentucky, Lexington, KY, USA) visited Ireland at the request of the Irish Thoroughbred Breeders Association (ITBA). During the week, he met with DAFF representatives, participated in laboratory workshops with the Central Veterinary Research Laboratory and the Irish Equine Centre, visited some infected premises, and addressed an ITBA industry meeting.

Between **22 and 31 July**, a total of ten cases *(C6, C7, C8, C9, C10, C11, C12, C13, C14* and *C35)* were euthanased, the latter on clinical grounds. These horses had each been resident in Hospital Y as either an in-patient or an accompanying animal to an in-patient at different periods in May and June 2006 whilst a number of the previous cases *(C1, C2, C4, C5* and *C33)* had been present. Each of these ten cases had been present in the main barn when *C1* was present. Five cases *(C6, C7, C8, C9* and *C11)* were confirmed in Hospital Y, whereas *C10* was confirmed after returning to its home premise in Co. Dublin, *C12* in Co. Meath, *C13* in Co. Wexford and *C14* in Co. Limerick.

c. August 2006

On **1 August**, all remaining horses in Hospital Y were relocated to 3 other premises in counties Dublin and Kildare (30 horses to a quarantine facility in Co. Dublin, 1 each to separate premises in Co. Kildare). These three premises were then restricted. Hospital Y was thoroughly cleansed and disinfected. The British Horseracing Board and Horseracing Regulatory Authority (of the UK) jointly introduced a requirement for an EIA test and declaration, applicable from 14 August, for all horses travelling to and from Ireland for racing. At a later date, French racing authorities also implemented this requirement. On **7 August**, *C15* (a mare on Farm B; a paddock/ grazing contact of *C4*) was confirmed, based on samples collected on 5 August. On **8 August**, Hospital Y reopened. On **21 August**, *C16* (a foal) was confirmed on Farm C, a previously unaffected premise in Co. Meath that was not contiguous or adjacent to any of the previously identified farms. Hyperimmune plasma had not been used on this farm. Furthermore, there was no evidence of horse movements linking this with previous cases. The same veterinary practice (Practice X) serviced Farms A, B and C, and had visited *C16* on Farm C on the same day as *C4* on Farm B. On 25 August, *C17* was confirmed in a mare on Farm A. This mare was the dam of *C32* (which had died on 14 June) and had also co-grazed with *C5* on Farm A (which had died on 12 July).

d. September 2006

On **1 September**, *C18* (a foal) was identified in Co. Derry, Northern Ireland. This case was linked to the earlier return of *C6* and *C11* to Farm I, their home premises. A mare and unrelated yearling *(C19* and *C20)*, each long-stay patients in Hospital Y and subsequently moved on 1 August to the quarantine facility in Co. Dublin, were confirmed positive. On 6 September, *C21* (the foal of *C13*) was confirmed, based on samples collected the previous day. This mare and foal had returned from Hospital Y to their home premise in Co. Wexford in July. On **7 and 10 September**, two further cases (*C22* and *C23*; both sport horses) were confirmed on Farm D, a previously unaffected farm in Co. Dublin. This premises was not contiguous to any known infected premise, there were no known at-risk animal movements, nor was there any known use of hyperimmune plasma. However, in April *C23* had undergone sinus surgery in the clinic associated with Practice X at a time coinciding with the treatment of *C2* at Farm B (unconfirmed case *U3* from Farm A was also present at this clinic at the same time period). Further, Practice X provided veterinary care to horses on Farm D. *C23* was clinically normal at the time of diagnosis. *C22* and *C23* had co-grazed throughout the summer of 2006. *C24* (a sport horse mare on Farm E, with fragments in counties Meath and Louth) was confirmed on **21 September**. Again, this was not contiguous or adjacent to known infected premises or any known history of usage of hyperimmune plasma. Unconfirmed case *U2,* the foal of *C24,* had been treated for a traumatic mechanical injury to its hind quarter in the clinic associated with Practice X at the same time as *C23* in April. The foal subsequently died in mid-May, however, there was no *post-mortem* diagnosis. The mare and foal remained in close contact up until the foal's death.

On **24 September**, *C25* was confirmed at the home premise in Co. Wicklow. This thoroughbred mare had left Hospital Y 74 days previously; the most-likely time to detection using the Coggins test following infection was 100 (maximum 132, minimum 73) days. Consequently, the period of restriction was extended to 100 days for those animals resident in the main or isolation barns at Hospital Y during 12-14 June. Further, for these animals, a Coggins test was required at least 100 days following discharge or from the last day of potential contact. An extended surveillance period was introduced requiring a 120-day ELISA test post-exposure on high-risk animals present in Hospital Y during 13-14 June, and close contacts of positive horses on home holdings.

On **29 September**, *C26* (a thoroughbred foal) was confirmed on another farm (Farm F) in Co. Meath. This farm was not contiguous or adjacent to any of the previously identified premises and there was no evidence of risk animal movement inwards. This farm was served by Practice X, and a possible link to *C12* was identified with a common treatment on 20 July.

e. October 2006

The extended surveillance programme, using ELISA-based serological testing, commenced in Co. Meath on **17 October**. On **26 October**, *C27* (a foal) was confirmed on a new farm (Farm G). No epidemiological linkages with earlier cases, apart from shared veterinary input (Practice X), were identified.

f. November 2006

On **17 November**, *C28* was confirmed at the animal's home premise in Co. Monaghan. At this time, this mare was one of only four animals present in the main barn of Hospital Y on the evening of 13 June that was still alive. This horse, which had been included in a review of animals that was considered at particular risk, had tested seronegative to the Coggins test on

8 earlier occasions. The most-likely time to detection using the Coggins test following infection was 157 (maximum 161, minimum 142) days.

On **23 November**, the extended surveillance programme commenced in Co. Kildare.

g. December 2006

On **10 December**, *C29* (a gelding on Farm H) was identified as part of the extended surveillance programme in Co. Meath, and euthanased the following day. This horse had no clinical signs that were consistent with EIA, and no epidemiological linkages with earlier cases, apart from shared veterinary input (Practice X).

Appendix 2: Agencies

- The Department of Agriculture, Fisheries and Food (DAFF) is the competent authority in Ireland with responsibility for the regulation and control of animal diseases listed under the Disease of Animal Act 1966. Head quarters are located at Agriculture House, Kildare St, Dublin 2. A total of 28 local District Veterinary Offices carry out field operations. The Special Investigation Unit (SIU) is based in Maynooth, and the Central Veterinary Research Laboratory (CVRL) at Backweston, each in County Kildare. http://agriculture.gov.ie, accessed on 06 November 2007.
- The Centre for Veterinary Epidemiology and Risk Analysis (CVERA) based at University College Dublin, Belfield, Dublin 4. CVERA is a national resource centre, providing policy advice and conducting epidemiological research on a wide range of animal health issues.
- The Irish Equine Centre (IEC) is based at Johnstown, Naas, Co. Kildare. It is an 'independent organisation that provides laboratory services for the diagnosis, management and prevention of diseases of horses. The Irish Equine Foundation Ltd - trading as the Irish Equine Centre - is a registered charity'. http://www.irish-equine-centre.ie/, accessed 13 August 2007.
- The Irish Thoroughbred Breeders' Association (ITBA) is based at Greenhills, Kill, Co. Kildare. The ITBA 'is a representative body of the Irish thoroughbred breeding industry at Government level both at home and internationally. The ITBA is an inclusive all-Ireland body with a regional structure'. http://www.itba.ie/, accessed 13 August 2007.
- Horse Racing Ireland (HRI) is based at Thoroughbred County House, Kill, Co. Kildare. The aim of the HRI is 'to develop and promote Ireland as a world centre of excellence for horse racing and breeding'. http://www.hri.ie/, accessed 13 August 2007.
- The Tripartite countries include Ireland, Great Britain and France. These countries have signed an agreement to allow free movement of horses without intra-community certification. For all other horse movements within the European Community, such certification is required under Council Dir 90/426/EEC.

Appendix 3: Regulatory and non-regulatory issues

a. Regulatory issues

National

i. Introduction of new legislation. Existing legislation (The Diseases of Animals Act 1975 [Notification of Infectious Diseases] Order, 1975 [S.I. 189 of 1975]) provided for the notification of disease and the restriction of animal movement. New legislation (The Diseases of Animals Act 1966 [Notification and Control of Infectious Diseases]) Order 2006 [S.I. 359 of 2006]) was introduced, revoking and replacing the previous legislation, to reinforce these provisions and provide additional control measures on animals and premises which were subjected to restriction

ii. National coordination meetings. From the outset of the epidemic, regular DAFF meetings were held at senior management level. At its height, these occurred on a daily basis. At these meetings, strategies regarding the control and management of the disease, communication with stakeholders and international communications were discussed and agreed.

iii. The Special Investigation Unit and the Centre for Veterinary Epidemiology and Risk Analysis. In July 2006, DAFF's SIU commenced an investigation into the circumstances surrounding the alleged importation and administration of hyperimmune plasma. In the same month, CVERA contributed to the national investigations, seeking to identify factors associated with the source and transmission of the EIA agent.

iv. Control measures. DAFF implemented a range of control measures:

- Movement controls on holdings and individual horses,
- A surveillance programme on infected holdings (a holding on which a case was confirmed), on holdings adjoining infected holdings, and also on horses identified as at a potential risk of exposure to infection either from an infected animal or a possible iatrogenic link.

The movement restrictions were based on intra-community trade requirements of Council Directive 90/426/EEC (& Tripartite agreement), and the export requirements for certain third countries. Restrictions remained in place on premises until all remaining horses had tested Coggins-negative on two tests at least 90 days apart, following the slaughter/removal of the infected animal. This restriction period recommenced whenever a new case was confirmed on that restricted premises and its associated adjoining premises. Restrictions on individual traced horses remained in place until each horse tested Coggins-negative on two tests at least 90 days apart, with the first test scheduled after the last potential contact with a potential source of infection.

C25 was identified on 24 September 2006, following a prolonged seroconversion period (minimum 73, most-likely 100, maximum 132 days). As a consequence of this case, the restriction period was extended such that high-risk horses were required to test Coggins-negative on two tests at least 100 days apart and a further test at 120 days after the last possible exposure. The risk profile of *C25* was similar to that of a number of other horses that, at that time, were being held on restricted premises.

As eradication progressed, the programme was intensified, with the introduction of measures that were consistent with, but additional to, the above-mentioned EU Directives. In particular, an accelerated testing regime was imposed on horses, following consultation with international experts. This regime consisted of two risk-based options:

- *Lower risk horses:* A Coggins test were conducted at 45 day intervals up to 90 days (Low risk horses were at a lessened risk of exposure to EIA infection by a case e.g. for horses resident on infected holdings which had no direct contact with a confirmed or unconfirmed case). During the 2006 outbreak, no infection spread was observed between adjoining/contiguous spread.
- *High-risk horses:* A range of tests (ELISA, Coggins, haemotology and biochemistry) were conducted at 10 days intervals for 60 days, then again at 90 days. Horses considered at high-risk horses included contacts, or forward-traced animals, that were considered to have a higher risk of being infected by a case. For example, this included horses that had shared a paddock with a case when vector activity was high, horses which a close relationship (such as foals or dams) with a case, and horses that visited the clinic associated with Practice X or Veterinary Hospital Y for an invasive treatment at or within 4 days of a case.

A number of cases were linked as a result of probable iatrogenic infection. As a consequence, two screening surveys (using the ELISA) were instigated on horses treated by a number of equine practices in the Meath, Dublin and Kildare areas. These locations were the focus of most EIA cases to that point. Testing was coordinated locally. As a result of these surveys, two inapparent carriers (*C27* and *C29*) were discovered.

International

On 15 June, the presence of confirmed EIA in Ireland was notified to other parties of the Tripartite Agreement (UK and France). On 16 June, the OIE, the International Disease Collation Centre and the European Commission were also notified. Relevant Chief Veterinary Officers (CVOs) were notified of relevant international movement of high-risk animals (those in-contact with confirmed cases). As the epidemic progressed, notifications of in-contacts were made to concerned parties as soon as they were traced and identified. At the meeting of EU CVOs in September 2006, the Tripartite partners were given a detailed update, concerning disease progression, and control and eradication measures in place. A further update was presented in January 2007 at the annual meeting of the Tripartite partners.

b. Non-regulatory issues

National

During the course of the disease episode, DAFF communicated regularly with a wide range of stakeholders, as follows:

- *National stakeholder meetings.* These meetings were held regularly to assist with disease control efforts. Further, measures were identified to build national and international assurance of Ireland's disease status. At a meeting with the Irish Thoroughbred Breeders Association (ITBA) and representatives of the sales companies on 19 July, it was agreed that all horses being offered for sale would be required to have a negative Coggins test for EIA within 30 days of being presented. These requirements have remained in place after the removal of the final restrictions on premises and horses.
- *Local meetings.* Information meetings for local stakeholder were held in several locations, particularly in the areas affected by the disease.
- *Press releases.* In all, 12 press releases were issued during the epidemic.
- *Web-based information.* Information for industry and PVPs was posted, and updated on 9 occasions, on the DAFF website since August 2006.
- *An information note.* An information note produced by the Irish Equine Centre was circulated by DAFF to all registered owners of the Irish Horse Board and to all members of the ITBA.

International

As the number of confirmed cases of EIA increased so too did the concerns with the EU of the health status of Irish equidae. This became evident among those intending to travel to the Dublin Horse Show in August 2006. Racing authorities in the UK, France and Germany also expressed concern and implemented a system of Health Declaration for racehorses originating in Ireland for the purpose of EIA. Likewise sales companies in the UK required a clear Coggins test within 30 days of going to sale. Outside the EU, counties such as New Zealand to which stallions had travelled for the breeding season sought re-assurance regarding the EIA status of premises from which the stallions had originated.

Appendix 4: The relevant legislation

a. Animal health legislation

A range of EU and national legislation was relevant to this outbreak.

National legislation

- Diseases of Animals Act 1966 (Number 6 of 1966).
- Diseases of Animals (Amendment) Act 2001(Number 3 of 2001)
- Diseases of Animals Act 1975 (Notification of Infectious Diseases) Order, 1975. (S.I. 189 of 1975)
- Diseases of Animals Act 1966 (Notification and Control of Infectious Diseases) Order 2006. (S.I. 359 of 2006)
- Animal Remedies Act 1993 (Number 23 of 1993)
- Animal Remedies Regulations 2005 (S.I. 734 of 2005)
- European Communities (Equine Stud-Book and Competition) Regulations 2004. S.I. No 399 of 2004

EU legislation

- Council Directive 90/426/EECof 26 June 1990 on animal health conditions governing the movement and import from third countries of equidae
- Council Decision 79/542/EEC of 21 December 1976 drawing up a list of third countries or parts of third countries, and laying down animal and public health and veterinary certification conditions, for importation into the Community of certain live animals and their fresh meat.
- Directive 2001/82/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to veterinary medicinal products as amended by Directive 2004/28/EC of the European Parliament and of the Council of 31 March 2004 amending Directive 2001/82/EC on the Community code relating to veterinary medicinal products.

Interpretation

EIA is an OIE-listed disease. Further, in 1975 EIA became a notifiable disease following inclusion in the Diseases of Animals (Notification of Infectious Diseases) Order, 1975 (S.I 185 of 1975) to the Diseases of Act (S.I 6 of 1966). The Diseases of Animals Act 1966 was further updated during the EIA outbreak by S.I. 359 of 2006 which further strengthened controls which DAFF could implement with respect to the diseases listed.

Prior to the 2006 outbreak, there was no specific EU legislation covering controls for an outbreak of EIA. Requirements relevant to EIA included intra-community trade and third country imports requiring certification under Article 4.5 of Council Directive 90/426/EEC. This directive also forms the basis for the Tripartite Agreement allowing free movement of horses between Ireland, the United Kingdom and France. Article 4.5 of Council Directive 90/426/EEC states that horses must not have come from a holding containing equidae which:

> *'in the case of infectious anaemia, until the date on which, the infected animals having been slaughtered, the remaining animals have shown a negative reaction to two Coggins tests carried out three months apart'.*

In addition, certification requirements from some third countries are more rigorous than those required under Council Directive 90/426/EEC, requiring that horses do not originate from holdings that adjoin any premises where EIA was confirmed.

b. Mutual recognition legislation

A range of national and EU legislation was relevant to this outbreak, including:

National legislation

- Criminal Justice Act, 1994. No.15/1994
- European Communities (Mutual Assistance As regards Correct Application of Legislation on Veterinary and Zootechnical Matters) Regulations 1993. S.I. No. 150/1993

EU legislation

- Council Regulation (EC) No 515/97 of 13 March 1997 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of the law on customs and agriculture matters
- Council Directive 89/608/EEC of 21 November 1989 on mutual assistance between the administrative authorities of the Member States and cooperation between the latter and the Commission to ensure the correct application of legislation on veterinary and zootechnical matters.

Appendix 5: Resource issues

a. Central activities

Roles and responsibilities

i. DAFF Policy. During the investigation, DAFF Policy fulfilled a number of roles, including:

- Coordination of field operations, including disease investigation and disease control activities
- Notification of disease situation appropriate international bodies (including the OIE; the European Commission; and the UK and France as Tripartite partners) and of horses traced to other EU Members states
- Communication to industry stakeholders through press releases and meetings. The meeting served to distribute information and discuss concerns. The stakeholders varied from professional organisations such as sales companies and the ITBA, to amateur groups such as local pony clubs in affected locations.

ii. Special Investigation Unit. The SIU conducted each of the legal investigations associated with the outbreak.

iii. The Centre for Veterinary Epidemiology and Risk Analysis. CVERA conducted epidemiological investigations during the outbreak, in close collaboration with colleagues from DAFF and other relevant organisations.

Human resources

i. DAFF Policy. During the outbreak, there was a very substantial commitment of human resources within DAFF Policy to the eradication effort, approximately 1,150 person-days, as follows:

i. Within the Veterinary Inspectorate

- 1 SSVI (180 days)
- 1 SVI (120 days)
- 1 VI (210 days)

ii. Relating to the enhanced surveillance programme (and other testing by PVPs) (dealing with orders and payments of invoices associated with EIA testing)

- 1 HEO (0.5 day per week, ~105 days)
- 1 EO (1 day per week, ~105 days)
- 1 CO (1 day per week, ~105 days)

iii. General administration

- 1 PO (90 days)
- 1 AP (90 days)
- 1 HEO (90 days)
- 2 EO (90 days each)
- 2 CO (210 days, 180 days)

ii. Special Investigation Unit. During the investigation, the SIU contributed 101 person-days to the EIA investigation, as follows:

- 1 SVI (16 days)
- 1 VI (85 days)

iii. The Centre for Veterinary Epidemiology and Risk Analysis. During and subsequent to the outbreak, CVERA contributed approximately 240 person-days, including:

- 1 Professor (90 days)
- 1 VI (150 days)

Financial resources

DAFF paid the salary costs associated with each of the above-mentioned central activities; approximately €354,500. Travel and subsistence costs were also paid by DAFF in association with these central activities, but are not yet available. During June 2006 to March 2007, DAFF also paid approximately €272,000 to cover:

- Costs associated with serological testing (including consumables) in a non-DAFF laboratory, and
- A part-contribution towards the cost of sample collection to PVPs as part of the enhanced surveillance programme.

No compensation was paid, either for infected horses or to restricted premises.

b. Field operations

Roles, responsibilities and activities

The role of *DAFF veterinary inspectorate* was two-fold, including:

- Investigation of the origin and extent of the infection in Ireland, in collaboration with CVERA and the SIU and under the coordination of DAFF headquarters
- Control of known disease, through forward and backward tracing, on-farm investigations and regulatory control

During the 2006 outbreak, approximately 1,521 horses were subjected to DAFF restriction and testing, and 25 (of the 28) DVOs were involved in tracing, restricting and testing horses. In 53 premises, full movement restrictions were imposed, whereby no equine or equine carcass could move onto or off of the holding. A total of 76 horses were traced to 5 other jurisdictions, including the Czech Republic, France, Germany, Italy and the United Kingdom (including England, Northern Ireland and Scotland).

An extended surveillance programme was coordinated by the Meath and Kildare DVOs during 17 October 2006 to 13 February 2007, and 23 November 2006 to 24 January 2007, respectively. During this programme, 8,593 horses were sampled, from counties Kildare and Meath, and to a lesser extent from Cavan, Dublin, Louth, Monaghan and Kilkenny. The field work was conducted by 13 veterinary inspectors (a total of approx. 70 person-days) and three private veterinary practices (approx. 10 private veterinary practitioners) in Co. Meath, north Co. Kildare, north Co. Dublin and south Co. Louth.

A booklet has been developed setting out voluntary recommendations to help breeders along with their veterinary practitioners to prevent and control a range of specific diseases in all breeds of horses and ponies. The recommendations are common to Ireland, France, Germany, Italy and the United Kingdom. It contains three Codes of Practice, covering:

- Venereally transmitted bacterial diseases caused by the contagious equine metritis organism, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa,*
- Equine viral arteritis (EVA), and
- Equine herpesvirus (EHV).

It also contains guidelines on Strangles, *Streptococcus equi.* For the 2006/2007 breeding season, additional guidelines in regard to EIA have been included.

Furthermore, the ITBA recommended that all mares going to stud after 01 January 2007 should have a negative EIA test taken within 30 days of first covering. The Department of Agriculture, Fisheries and Food publicly endorsed this recommendation and wrote to 50 stud-masters throughout the country who had themselves publicly committed to the strict compliance with the ITBA recommendation acknowledging their contribution to the eradication of EIA. During the month of January alone, in excess of 14,000 samples were taken and analysed as a result of this recommendation.

Human resources

During the outbreak, there was a very substantial commitment of human resources within DAFF field operations to the eradication effort, an estimated 1,257 person-days, as follows:

a. Horse and premise restriction/de-restriction
   - SVI (7 days)
   - VI (107 days)

b. Sample collection
   - SVI (223 days)
   - VI (325 days)

c. Field investigation and associated office work
   - SVI (186 days)

- VI (78 days)
- TAO (30 days)

d. Associated meetings
- SVI (16 days)
- VI (32 days)

e. Administration (253 days)

Overall management of the field operations was undertaken by the four Regional Senior Superintending Veterinary Inspectors, who communicated with Veterinary Inspectors in the 24 affected DVOs. In addition, administration staff were involved in a number of DVOs, primarily in Co Meath and Co Kildare, at the capacity of 8.5 full-time positions.

Financial resources

DAFF paid the salary costs associated with each of the above-mentioned field operations; approximately €380,500. Travel and subsistence costs associated with these field operations were also paid by DAFF, but are not yet available.

c. Laboratory support

Roles and responsibilities

Throughout the outbreak, laboratory support was provided by DAFF (Central Veterinary Research Laboratory [CVRL], regional veterinary laboratories) and the Irish Equine Centre (IEC).

Human resources

At CVRL, the laboratory work was conducted by:
- 1 SRO (~60 days)
- 2 senior laboratory analysts (~120 days each)

Financial resources

The salary costs associated with the CVRL-related work was approximately €58,000. These costs were met by DAFF. Additional laboratory costs, also borne by DAFF, were presented previously.