Horse Transport –
history, current practices, the future and veterinary recommendations

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Foreword

This booklet provides an insight into the history of horse transport and the current practices of the horse transport industry. Data is presented which illustrates the enormous numbers of horses that are transported each year and provides examples of various air journeys and their effects. These examples have been selected so that they have relevance to the Australian horse industry; the transport of thoroughbred yearlings to auction sales, transport of racehorses to major overseas racing festivals and transport of horses from Europe to Australia. These examples are followed by a look into the future which explains how current research initiatives will increase awareness of the effects of journeys and help to maintain ongoing improvements in the practices of this very substantial and economically important industry. This publication concludes with practical recommendations on the health care of transported horses based on the author’s experience of over 150 flights with horses to Australia and his research.

This booklet is part of a strategic set of publications from RIRDC to provide timely and relevant information for the Australian horse industry. The publication is complementary to a publication on travel sickness by Professor Daria Love and her colleagues. The information in these booklets will be particularly valuable for the year 2000 when many horses are being transported to Australia for the Olympic Games.

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Chapter 1. Introduction and History

Use of the horse for transport goes back to time immemorial. Horses were used for commerce and for warfare. Warfare, trading in prized horses and colonial expansion created a demand not just for horses to serve as a means of transport but also for the safe and effective transport of horses. Persian, Greek and Roman armies used their ships in the course of the Mediterranean wars of their times, and horses played an important role during the First World War.

Seven horses arrived with the first fleet to reach Australia from England in 1788 and Hayes in 1902 reported that 194,622 horses were transported from Europe, the Americas and Australasia to South Africa in the course of the Boer Wars from 1899 to 1902.

The use of horses for pleasure and sport also contributed to a demand for their transport. This need was met more through land transport than through the sea transports referred to above. In Europe, the land transport of horses may have had its origins in the 18th century. One of the most important sires in the history of the Thoroughbred, “Eclipse”, travelled by road, in a horse drawn van, to stud in 1771. The winner of the 1836 English St. Leger, “Elis” was transported from his home stable to the racecourse for this race in a time span hitherto thought impossible. Horses were walked to the racecourse at this time, often travelling long distances to do so. Generous odds were offered against him winning the race, by those who believed that no horse could travel such a long distance in such a short time, and succeed. This was later seen to be an expensive misconception. “Elis” travelled in an early horse van and arrived in time to race, without apparently, experiencing adverse journey effects.

Rail transport of horses may have commenced in the mid 1800’s and was perhaps, the preferred means of transporting large numbers of horses by land. There is evidence of considerable attention to detail in rail transport of horses. Although Wortley Axe in 1903 bemoaned the “lack of evolution of (rail) horse boxes in the last 30 years”, he included an illustration of “Bartrums Tethering Apparatus” in his text on the horse.
This apparatus allowed horses to raise and lower their heads at will during transport. Although road transport of horses progressively replaced rail transport during the 20th century, horses were still transported in considerable numbers to auction sales and race meetings by rail, within living memory.

The first motorised transporter for horses was built in 1901 and the first known shipment of a racehorse by air is thought to have taken place in the 1920’s. Perhaps one of the most significant early horse flights took place in 1949, when Vincent O’Brien sent “Cottage Rake” and “Hatton’s Grace” from Ireland to the Cheltenham National Hunt Festival in England and both horses won. In 1946, eight horses were flown across the Atlantic Ocean from Shannon in Ireland to the then Eidelweiss, now JFK, airport in the USA. The journey took 22 hours and necessitated many technical stops. Faster, Douglas DC6/DC7 pressurised aircraft were used to transport horses on this route by 1952.

The international horse breeding industry began to be enhanced by access to air transport services when regular horse carrying flights between Ireland, England and France were initiated in the early 1950’s. Bristol Freighter aircraft were used for this service. Their front loading facility made it easier to load than other contemporary aircraft, but they were felt to be noisy and slow by the personnel that travelled with the horses. The volume of traffic was sufficient to justify staff dedicated to providing horse care from departure to destination, familiar with the environments and requirements at airports and at altitude. They became known as “Flying Grooms”. Their numbers have grown from a handful, to the stage at which there are international efforts to recognise their chosen profession by accreditation and certification.

The “jet age” arrived with the first carriage of horses in a Boeing 707 in the early 1960’s. Stalls were built around the horses after they had walked up a ramp into the aircraft. These were so called “open stall systems”, which although they surrounded the horses, they did not fully enclose them. In 1968, the first widely noted tragedy occurred, when an Elizabethan aircraft with three crew, five grooms and eight horses
on board, crashed on landing at London’s Heathrow airport. All of the crew, all of the horses and three of the grooms, died. The accident was attributed to metal fatigue.

Fast and efficient, regular air services from Europe to the USA, Japan and Australia became commonplace in the 1970’s, using the then “state-of-the-art” Boeing 707 and DC8 aircraft. Palletised freight systems in which three-horse stalls with a groom’s compartment, were loaded with horses on the ground and then lifted onto the aircraft led to faster loading and unloading. Thirty horses could now be loaded onto an aircraft in an hour. Later, 112 horses could be carried in a Boeing 747 when these and other, so called “wide bodied” jets became available for horse charter flights in the 1980’s. Improved access to scheduled services also took place and three horses and a groom could from then onwards, travel almost anywhere in the world in fully or partially enclosed “air stables’ or “jet stalls”.

A modified “insect-proof” stall was used to transport Vintage Crop from Ireland to Australia, prior to his victory in the Melbourne Cup.
Chapter 2. The Horse Transport Industry Today

2.1 Land transport

Present day road transport varies with the wide variety of vehicles that are now available. There is also variation according to the type of horses that are being transported. Horses may be carried in either trailers ("floats") or in modified vans or lorries. Trailers or "floats" are usually designed to carry two or three horses in Europe, but similar trailers can carry six, nine or even more horses, and these are common in the U.S.A. Heavy goods vehicle chassis lorries are combined with purpose built coaches to provide individual stall accommodation for valuable horses and ponies. These vehicles may vary considerably in appearance, internal volume and layout. They are usually designed to carry four, six or nine horses. There is accommodation for grooms to travel with these horses, usually in the ratio of one groom for up to nine horses. The individual access that is afforded by the vehicle design permits the provision of food and water for horses, while the vehicle is moving. Food in the form of hay and water usually is provided to horses in transit under this system, at least every six to eight hours. Journey durations can vary from a few hours to several days. The current recommendation within this sector of the horse transport industry, following the work of Professor Daria Love’s research group at the University of Sydney, is for overnight rest, off the vehicles in stables, to be provided after every 12 hours of transport.

2.2 Air transport

Air transport of horses utilises either a "jet-stall" system in which horses travel in a fully enclosed air stable or an open stall system in which there is a lesser degree of enclosure. The open stall system usually is utilised when the entire aeroplane (which would be a freighter type configuration), or a considerable section of it, has been chartered by shipping agency. The numbers of horses that are carried in open stall systems is determined by the type or aeroplane in which they are carried and the size of the horses to be transported.
Three horses can be accommodated across the width of a narrow bodied aeroplane e.g. Boeing 707 or Douglas DC 8, in triple stalls. This number can be extended to four horses provided they are relatively narrow in conformation, in “quad” stalls. Wide bodied jets e.g. Boeing 747 or Douglas DC 10 can accommodate up to seven horses across their width.

Jet stalls can carry up to three horses and have a groom entry door and a groom’s compartment at the front of the stall. Jet stalls are used where aircraft are chartered from airlines but they can also be used in so called “Combi” systems, where passengers are carried at the front of the aeroplane and freight, including the horses in the jet stalls, is carried in the rear. Passengers are separated from the freight section by a partition.

The normal practice of the horse air transport industry is that the ratio of personnel to animals should usually be one groom for every three horses on the aeroplane. Seating restrictions may limit the number of grooms that can be carried. Horses are offered hay ad lib while the aeroplane is at flight and water is provided every six to eight hours or at landing / refuelling stops.

2.3 Rail and Sea transport

Rail transport of horses to auction sales is still utilised in India. Consignments of Thoroughbred yearlings have been sent from stud farms near Delhi to sales held in Bombay in recent years. Sea transport of horses was, at least until the early 1990’s, utilised for the transfer of live horses destined for slaughter, from South America to Italy and the same route is still used to transfer polo ponies.

2.4 Horse transport industry statistics

The enormous numbers of horses that are transported are not always appreciated. Relevant statistics can be obtained from national and international import and export trade statistics and from data derived from various sectors of the horse industry.
Trade statistics include both permanent and temporary, import and exports. Permanent imports and exports are usually taken to reflect the sale of horses. Temporary imports and exports may relate to competition, racing, breeding and the transport of horses to auction sales in other countries. A significant proportion of horses sold at auction overseas will find new owners in their country of origin and return there.

Government statistics do not reflect the use of trailer transport for holiday and leisure activity by an ever increasingly mobile human population. Breed societies do not document the number of horse movements in a manner similar to those that are compiled for trade statistics. However, the 318,952 horse movements across European Union national frontiers were recorded by the EU Eurostats office in 1992, and 605,900 Thoroughbred horses could have been transported for either racing or breeding in 37 of the major racing countries in 1990 on the basis of figures compiled by and extrapolated from the Irish Thoroughbred Breeders Association in 1994. It is now estimated that 1.5 million horse movements occur in Germany alone each year, in the course of equestrian events.

Horses are also transported for slaughter. A total in excess of 850,000 live horses was imported into the EU from the former Eastern bloc between 1988 and 1992. The U.S.A. is the world’s largest supplier of horse meat. A single US horsemeat packaging plant purchased and shipped 25,000 horses in 1988.

The true global total of horse transport movements is so large that it is almost impossible to estimate.

Many of the horses that are transported are likely to travel in the immediate care of their owners or their representatives in road vehicles of one sort or another. Often however, moving one’s horse(s) oneself can often be impractical or undesirable. International or relatively long distance road transport and all forms of air transport are good examples of when it may be better to delegate arrangements and responsibility to specialist horse transport agents.
Chapter 3. What are the effects of travel on horses?

Journey effects are not necessarily adverse. By way of analogy, we all as human beings, often experience short-term demonstrable responses to some form of challenge. We all experience elevated heart rates when crossing from one pavement to another in busy traffic in the rush hour. This phenomenon is short lived. We recover from it very rapidly. The more we experience this or any other event, the more rapidly we accommodate to it. Similar responses are found in horses.

Prolongation of an event, such as transport, may result in stress, fatigue and eventually, illness. There is in horses, as in humans, great individual variation in ability to tolerate travel. Journeys that seem to trouble some horses may cause little demonstrable effect in others.

The term “transport stress” has been utilised to describe some of the effects of travel. Stress is a term that is easily understood but is notoriously difficult to define. One of the most useful definitions of stress is that used by Fraser and his research colleagues in 1975. They stated that stress occurs when an animal (a horse) is required to make abnormal or extreme adjustments in its behaviour or internal management (physiology) in order to cope with adverse aspects of its environment and management. This definition allows us to recognise that some adaptations to travel are normal and that we all have a role in optimising the transport environment and our management of it.

Measuring various adaptive responses can give us an impression of the extent to which horses have been challenged by a journey and provide us with an impression of the rate and duration of recovery. We can reasonably suggest that we should be most concerned, not when we observe transient minor changes, but when adaptation fails and disease emerges.
Chapter 4.  Examples of journeys and their effects

4.1  Short Haul Air Transport of Thoroughbred Yearlings

Outside those who work in the relatively small “niche” industry that provides horse transport services, very little is known of the details of moving horses from one place to another. As with any other apparent mystery, classification can be an aid to understanding. For convenience, horse movements can reasonably be divided into short, medium and long haul journeys. In the context of air transport, short can be defined as less than 12 hours, medium 12 to 24 hours and long, as greater than 24 hours. These divisions relate to door to door time, not just the air travel section. Focus on the air travel section while ignoring the total journey time can be dangerously misleading. Veterinary research has shown that horses begin to experience demonstrable journey effects after 12 hours. Personal experience has shown that journey effects can be present in some individuals in as relatively little as six to eight hours.

Similar responses are found in animals. Yearling thoroughbreds are by definition, among the most inexperienced of the thoroughbred population. There is a thriving international traffic in these yearlings. A major part of these movements is comprised of yearlings being transported to and from the major auction sales held each Autumn in Newmarket in England, Kildare in Ireland, Baden–Baden in Germany and Deauville in France. If one formed the opinion, (which would it must be emphasised, fly in the face of the experiences of a highly successful and long established industry), that short haul air movements were unduly challenging, one would anticipate that the maximum undesirable effects would be seen in the course of this traffic of inexperienced horses.

This idea was used in a research study that sought to identify for other purposes, useful indicators of transport stress in horses. Blood samples were collected from a large consignment of yearlings on a stud farm in Ireland, prior to their departure for the yearling sales in Newmarket. They had never been transported before. Their
journey consisted of a three hour road section to Dublin airport, a one hour flight to the UK and a final one hour road journey to the Newmarket Sales complex.

The journey effects found in these yearlings on arrival, were no greater than those that were present when they viewed their new surroundings in the sales complex for the first time, the following morning.

If short haul journeys are responsible for so little demonstrable change in such inexperienced horses, it seems reasonable to conclude that for all but exceptional individuals, short haul air journeys where competent experienced staff are at hand, are of very little consequence.

4.2 Medium Haul Transport of Racehorses to International Racing Festivals

There are now, numerous international racing festivals and the proposed World Cup races with new events such as that planned in Singapore, will be of ever increasing importance. The Hong Kong Jockey Club therefore deserve immense credit for sponsoring the only study to date of the effects of transport on horses competing in a major international racing festival. This study was initiated by Graham Rock, the well known and highly respected racing journalist and owner of the multiple UK winner “Pasternak”. Graham brought the research capability and interest in transport related studies undertaken by the Irish Equine Centre together with the enlightened perspective of the then Chief Executive of the Hong Kong Jockey Club, Guy Watkins. The result was a study of rectal temperatures, body weight and blood sample parameter changes in horses sent to race in the Hong Kong Invitation Races.

All of the overseas entrants accepted the invitation, issued with the active support of Dr. Keith Watkins and his team in the Club’s veterinary department, to participate in this study. This impressive level of response may be a reflection of the dearth of information previously available to guide trainers in this context, and of the thirst that there is for it.
Study of the details of the transport to Hong Kong, from Europe, the USA and Australasia, showed that there was a 50% chance of even the most meticulously and expertly planned journeys encountering some degree of technical, weather or other form of delay. As has now been clearly demonstrated by veterinary research, the longer the journey, the more profound the journey effects may be. Horses examined after arrival could be divided into healthy horses and a small minority of horses whose health had been compromised by travel. Risk of compromised health status is not confined to horses travelling to Hong Kong. There have been many highly publicised instances of compromise of intended participants in for example, the Japan Cup, major races in the USA and elsewhere.

The vast majority of the horses that travelled to Hong Kong arrived without any form of health compromise. The extensive research based monitoring programme showed that journey effects were present in all but very few of this group, for about three days after arrival. There were also one or two individuals, that were entirely unaffected by the journey.

A small group of the horses needed veterinary intervention to assist them to make a swift and fully effective recovery from the journey and from the “shipping fever” (see section 6.2.4) which affected them. When this need arises, it is likely that the minimum duration of treatment will be between three and five days. This treatment can impact on the planned post arrival preparation for racing and of course, there must be sufficient time after cessation of therapy for the treatments to be cleared from the horses’ systems, to allow racing in a medication free environment.

This is the reason why Hong Kong arranges travel sufficiently in advance of racing to allow for the eventualities outlined above and their resolution. This policy followed from investment in the research programme and translation of its results into the management system for this major racing festival.

4.3 Transport of horses by air from Europe to Australia.
The Irish Equine Centre received funding for studies on the transport of horses from the International Equestrian Federation and the International League for the Protection of Horses, which resulted in the publication of a report on the transport of horses to Australia in 1990. The work that led to this publication was made possible as a result of the efforts of Quentin Wallace and his colleagues at International Racehorse Transport and through the consent of the owners who permitted access to their horses.

We studied a flight from London to Sydney. The aeroplane used for this flight was a specially chartered Boeing 747. A total of 112 horses were carried on this flight in open stalls that were arranged so as to carry seven stalls across the width of the aeroplane. We were able to measure temperature, relative humidity and numbers of bacteria and other airborne particles within the aeroplane and we were also able to take blood samples from the horses before and after the flight. There were significant differences between the conditions experienced in flight and during refuelling stops. Surges in temperature and relative humidity occurred and although they may not in themselves have posed a major challenge to the respiratory system of the horses, these factors may have added to the challenge presented by the large increases in micro-organisms that we found when the aeroplane was stationary. These large increases in micro-organisms may have contributed in the development of respiratory disease/travel sickness/shipping fever on arrival in Australia in seven of these 112 horses (6.3%). There were significant differences between the degree of change seen in blood samples from normal/unaffected horses and those affected by shipping fever.

This study and other similar studies (such as that which was filmed by BBC Television and broadcast as “Flying Horses”, in the Q.E.D. science and technology programme series) led to the introduction of an in-flight, equine veterinary clinical service for horses travelling by air to Australia from the UK, USA and Ireland. We have been able to show that the introduction of this service has led to a 50% reduction in the number of days of treatment required for horses with shipping fever.

Chapter 5. The future
We can and must, always try to do things better. This is as true of the horse industry as it is for any other industry. However, our best efforts do not necessarily always result in the hoped for improvements that we sought. This may be pertinent to the development of the jet stall or air stable. The jet stall has allowed us to transport horses with significant improvements in availability of routes, access to first class airlines and facilitates a hitherto undreamed of rapidity loading and unloading of horses onto and off the aeroplane. Jet stalls have today, in many instances, replaced the open stall systems for the air transport of horses. There is an impression, which requires further study, that the replacement of open stalls by jet stalls may have led to an increased incidence of shipping fever.

It would not be unfair to say that the principal focus of jet stall design has been to facilitate the above factors and to ensure the safety of all personnel on the ground and in the air. However, the impact of jet stall design(s) on equine physiology and their potential role in the development of shipping fever, has yet to be elucidated. The impact of the head held high position described by Professor Daria Love and her colleagues is clearly a very important consideration in the jet stall designs of the future, but other factors too may be important in the development of shipping fever. We need to know more about the epidemiology (study of risk factors) of this condition and there are current endeavours to obtain funding for a major equine shipping fever epidemiology study. Australia with its unique pre and post arrival quarantine requirements is in an important position to facilitate and collaborate in this research.

The choice of Sydney for the next Olympic Games has stimulated considerable further international interest on the effects of transport on equine health and performance. International meetings and workshops that studied these topics have been held within during this year at the University of Sydney, and in the USA and other countries. Revised guidelines on the transport of horses by road and by air will be published by the International Equestrian Federation and the exciting and important World Cup Series of Races, sponsored by the Emirates, has been initiated. All of these developments and initiatives will lead to increased knowledge and awareness of equine transport and its effects, all to the good of our friend, the horse.
Chapter 6. Recommendations on the transport of horses

The following recommendations are based on previous work which was published by the International Equestrian Federation in 1990 (Recommendations To Horse Owners And Their Representatives On The Transport Of Horses by D.P. Leadon, C.Frank and A. Atock) These recommendations are currently being updated following a meeting held in Middleburg, Virginia in the USA, earlier this year.

The recommendations that follow in this current RIRDC publication are in essence equally applicable in general terms, to both road and air transport. In many ways, it makes little difference to horses whether they are being transported in a vehicle that has wings or one that has wheels. Fundamentally, we are placing large animals in a confined space and moving them, in confinement, from point A to point B.

Providing good health care for transported horses requires focus prior to travel, during the journey and after arrival.

6.3 Prior to transport

6.1.1 Journey planning

Wherever possible, hostile or potentially hostile environmental conditions en route should be avoided. Adding extremes of heat or cold to the challenges inherent in transport is always undesirable. Use competent staff; drivers, grooms and specialist “flying grooms”. Ensure adequate ventilation. Avoid in as far as possible, prolonged stationary periods in traffic or at refuelling stops. Provide appropriate tack. Bring sufficient food and water. Have an effective means of restraint. Plan for rest or recovery periods. Check that veterinary help may be available if required. Notify the point of arrival of the journey plan and any special requirements.
6.1.2 Training and familiarisation

Many horses have become familiar with transport from the time that they are foals. Most, even many that have never been transported before, demonstrate just how “biddable” these wonderful animals are, and will relatively readily allow themselves to be loaded and confined in a transport vehicle. There are however, a small minority whose temperament is more questionable or whose history can be suggestive of resentment of transport. In these cases, familiarisation sufficiently in advance of transport to be meaningful and if absolutely necessary, tranquillisation by a veterinarian, for safety reasons and to facilitate loading on the day of transport, may be indicated. Allocation of greater space within the vehicle may also be helpful.

6.3.1 Water and electrolytes

There is a belief that it is necessary to “pre-load” horses with fluids and electrolytes prior to travel. This may well be unnecessary unless a horse has a demonstrable history of dehydration and excessive or uncontrolled administration of electrolytes may actually have adverse effects on water and electrolyte balance. It is prudent to check that a horse that is to be transported has been drinking in accord with its own norm in the days leading up to transport and especially immediately prior to transport.
6.3.2 Body weight

Horses tend to lose weight on journeys. The amount of weight lost can range from 0.45 to 0.55% of total body weight (about 2.5 kg in a normal mature Thoroughbred horse) per hour of transport. This weight loss may reflect reduced dietary intake during travel, the evacuation of the contents of the rectum and muscular work associated with maintaining posture during movement. It is not unusual for horses to lose 20 kg on international flights and horses with shipping fever may lose 35 or more kg, en route. Exceptional racehorses, well used to international travel may however, fail to lose even a single kilogramme on flights of 12 hours or more. These horses are often among the most successful international competitors! In contrast, horses travelling on extremely long road journeys (up to 60 hours) have been found to lose up to 5% of their body weight.

Weight lost in transit tends to be regained over the following three to seven days in healthy horses and perhaps over longer periods in horses with shipping fever.

There is therefore, much to be gained from weighing horses prior to travel to establish a baseline for comparison with weight status on arrival and in the recovery period from the journey.

There is no guarantee that any scales available for post arrival weight measurement are identical with those used prior to departure. The body weight of the accompanying groom of some heavy piece of equipment or feed that has been
transported with the horse should give an indication of the comparability of both sets of scales.

6.1.5 Respiratory Health and Disease

One of the fundamental rules of transport is “sick horse on, sicker horse when getting off”. The importance of avoiding the shipment of horses of compromised health status, other than for transfer to a hospital or other clinical facility, cannot be over-emphasised. This is especially true for horses affected by respiratory disease. Horses with fever or nasal discharge, those with a history of exposure to other horses with infectious respiratory disease (e.g. Strangles or viral respiratory infections) should not be transported unless passed as being fit to travel by a veterinarian.

6.3.3 Medication

Unnecessary medication should always be avoided. Adverse reactions are an ever present hazard with all therapeutic substances. Tranquillisers should be administered by a veterinarian. Acepromazine which seems to be widely available world-wide may be contra-indicated in entire colts and stallions. The so called “prophylactic” use of antibiotics is also contra-indicated. This highly questionable practice may lead to respiratory disease caused by bacteria which are resistant to the antibiotic which was administered in the mistaken belief that it would prevent disease. The use of immunostimulating agents should also be avoided. They can result in depression, fever and other undesirable effects that can be difficult to differentiate from shipping fever and too little is currently known of their potential efficacy in the prevention of shipping fever to make their administration justifiable. Any substances
that reduce the immune and inflammatory responses (e.g. non-steroidal anti-inflammatory drugs such as phenylbutazone, corticosteroids etc. etc) also are contra-indicated prior to shipment.

Any substance given prior to transport in horses destined for racing or other forms of competition may potentially be detected in the course of post arrival forensic (dope testing) procedures.

There is a long standing horse transport industry practice of seeking the administration of mineral/laxative oils prior to transport, in addition to feeding a light laxative diet on the night(s) immediately prior to transport. The latter may be more important than the former. Both practices may have their origins in the days when horses shipped for warfare tended to develop laminitis after long sea journeys. Although it is tempting to state that laxative considerations prior to transport may be unimportant, it is salutary to remember that there have been a reported series of colic related equine fatalities at altitude, on flights to destinations within the former USSR, in the last two years.

6.4 During transport

6.4.1 Behaviour and injury

Horse behaviour should be monitored regularly throughout any transport. Personnel should offer verbal comfort and companionship, apply restraint or where appropriate tranquillise as required. Additional skilful help may be required urgently if
equine frenzy occurs. It must be recognised that may be foolish for personnel to pursue valiant attempts at restraint in some extreme circumstances. Any depression or injury in horses should be noted and appropriate first aid action taken wherever possible.

6.4.2 Hay and water

Hay or perhaps the more dust free “haylage” should be available on an *ad lib* basis throughout the journey. Water should be offered every four to six hours. Addition of electrolytes to drinking water should be avoided as it may depress water intake.

6.4.3 Environmental monitoring

During any journey, environmental temperature, relative humidity and the concentration of contaminants in the environment may change. During air journeys in particular, although also in road journeys, it may be helpful to place a wet and dry bulb thermometer in the vehicle or air stable, near the breathing zone of the horse and to record temperature and humidity at regular meaningful interludes. This information can be very helpful in deciding whether to cool or perhaps warm the environment in which the horses are being transported. It provides an objective means for doing so and of the success or failure of attempted improvement. Horses travel better in cool conditions than in hot conditions and temperatures
in the mid teens Celsius are probably ideal if attainable. In greater heat, high relative humidity or where horses are sweating, water should be offered more frequently than the norm.

The inevitable accumulation of faeces and urine associated with confinement will lead to a build up of environmental contaminants. These contaminants will be at their most deleterious when the vehicle is stationary. It is for this reason that it is recommended that stationary periods are kept to a minimum. Recent research work carried out in Japan suggests that in the case of long road journeys, there is benefit in removing faeces and urine soaked material, during compulsory driver stops. This is clearly impractical during air journeys.

6.4.4 Shipping fever and other illness

Shipping fever is the most common illness found in horses that are being or have been, transported. It is a respiratory infection characterised by signs of depression, inappetance, fever, increased respiratory rate, nasal discharge, coughing (often a distinctly soft, moist cough) and can rapidly progress to pleurisy and pneumonia. It may be better described as transport-related respiratory disease (see booklet on Equine Pleuropneumonia also published by RIRDC). It can occur in as little as four to six hours after departure in all journeys. Initial signs of this condition may be seen relatively soon after take off in air journeys, which have been preceded by long
road journeys or by long delays spent in a road vehicle while awaiting loading onto aircraft.

The incidence of this condition in long journeys may be 6% or perhaps even much higher. In any shipment of 16 or more horses it is reasonable to anticipate and provide for one or more instances of this disease complex.

Not all cases of shipping fever are apparent during the journey or immediately after arrival. A substantial number of cases will be inapparent until the morning after arrival or thereafter.

Where the above clinical signs are observed during road journeys, veterinary help should be sought *en route* or, if this is impractical, be sought for the moment of arrival. In air journeys, where a veterinarian is aboard the aircraft, clinical intervention should occur immediately. It has been shown that prompt intervention in this manner reduces the duration of therapy (and thus of the severity of the illness) by 50%. Colic and all of the other unpredictable conditions that are the inherent hazards of horse keeping, can also occur in transit either on the road or at altitude. The approach to dealing with them should be, in general terms, as described above for shipping fever,
6.5 After arrival

6.3.1 Behaviour

Horses may be visibly excited after arrival at any unfamiliar premises. After long journeys, this initial excitement may be followed by apparent “tiredness”. If observed, fatigue should be monitored carefully. Horses should be allowed some gentle exercise after arrival perhaps being led “in hand” or turned out into a small, confined paddock in which they are the sole occupant. They show interest in hay and water within two hours of arrival. If they fail to do so they should be considered to be depressed rather than tired and appropriate further examinations, especially examination of rectal temperature, should be carried out.

6.3.2 Rectal temperature

The taking of rectal temperature immediately after arrival and twice daily for at least the first three days after arrival is essential after all long journeys. Fever (temperature >39.0°C) or any of the aforementioned signs of shipping fever or any other disease, are an indication for immediate veterinary intervention.
6.3.2 Body weight

Check the comparability of the scales used prior to departure with those available after arrival. Record the weight lost during transport. Monitor the rate at which it is regained.

6.3.3 Resumption of normal activities

Allow at least one day of rest after journeys of up to 12 hours. At least three days of recovery should be provided for after air journeys of 12 hours or more for all but exceptional individuals. Allow where possible, a seven to eight day recovery period to provide a window of opportunity for treatment of shipping fever, and its resolution, if racing or competing overseas. This interval should facilitate clearance of essential medication, prior to competition.

Be guided by behaviour, weight gain (and other parameters such as perhaps haematology and blood biochemistry) in selection of an appropriate post-arrival training regimen, prior to competition. If you wish to monitor the blood biochemistry prior to arrival, consider bringing a frozen pre-departure plasma sample with you, so that post-arrival samples can meaningfully be compared with those taken at home.
6.3.4 Return journeys

The effects of long journeys may be cumulative. Remember that you may be superimposing the challenges of competition on the journey effects to your destination and then adding further return journey effects if you do not allow appropriate recovery phases between each of these events.
Further reading

Eurostats. EU Commission, Brussels, Belgium.

Fraser D., Ritchie J.S.D. and Fraser A.F. (1975) The term “stress” in a veterinary context


