SPRING EDITION 2014

XLVETS EQUINE - BETTER TOGETHER

Equine MATTERS

www.xlequine.co.uk

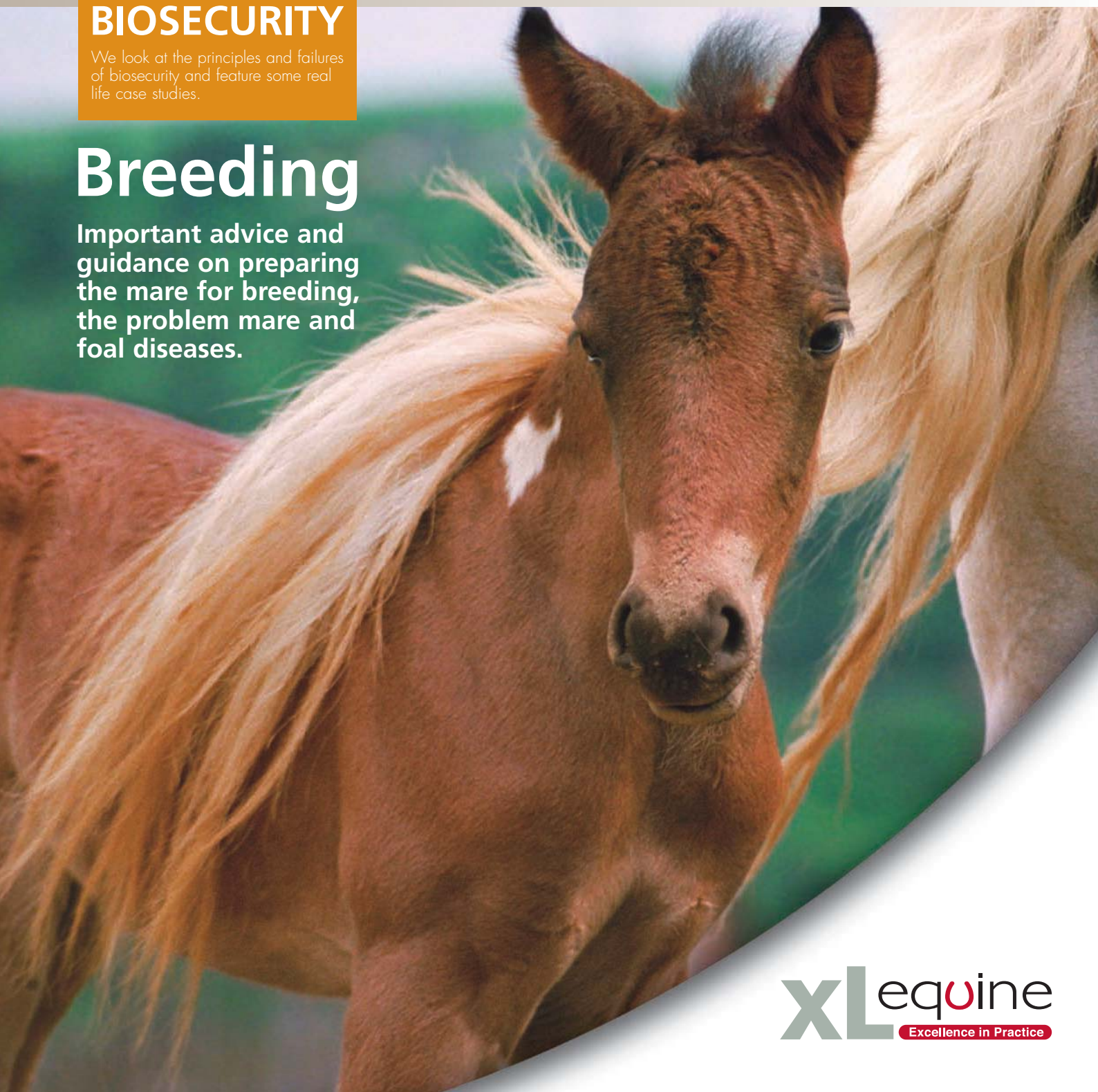
Inside this issue:

BIOSECURITY

We look at the principles and failures of biosecurity and feature some real life case studies.

Breeding

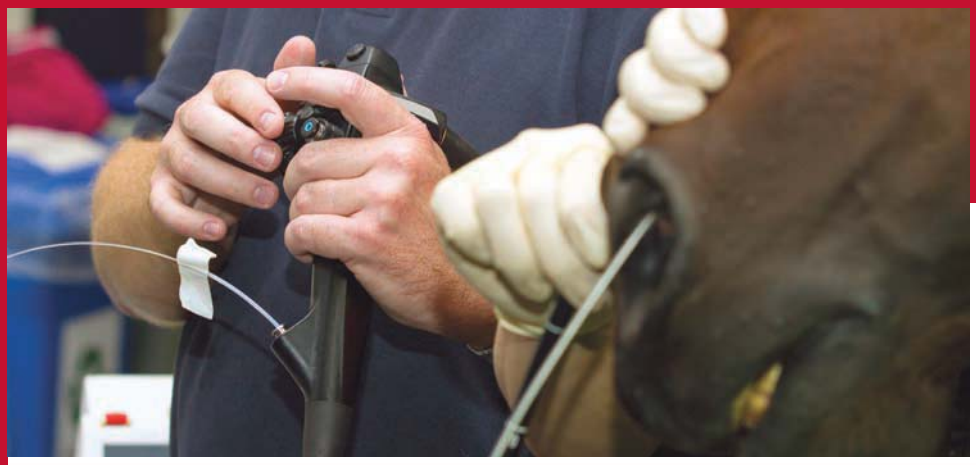
Important advice and guidance on preparing the mare for breeding, the problem mare and foal diseases.



xLequine Excellence in Practice

Vet Focus

In each issue of **Equine Matters** we feature a brief insight into a selection of the veterinary surgeons that make up XLEquine. Featured in this issue are Karl Holliman, Andrew Robinson and Sarah Spencer...



Karl Holliman BVM&S Cert EP MRCVS

Karl Holliman is the senior equine veterinary surgeon at Cliffe Equine, the equine department of Cliffe Veterinary Group Ltd in East Sussex, where he is a Director.

I qualified from Edinburgh University (The 'Dick' Vet School) in 1991. After a short period in mixed practice in Scotland I moved to a mixed practice in Yorkshire. In 1994 I joined Cliffe Veterinary Group as an equine vet and am now a Director. In 1997 I was awarded the Royal College Certificate in Equine Practice.

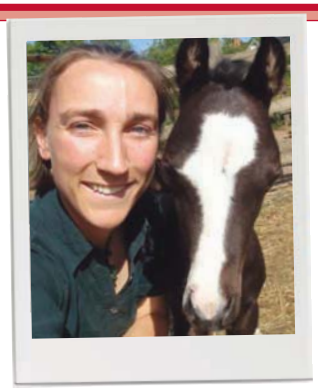
My main veterinary interests are all aspects of equine surgery, lameness, stud work and equine dentistry. I am also a qualified equine dental technician having passed the joint British Equine Veterinary Association (BEVA) & British Veterinary Dental Association (BVDA) Exams and am now an examiner. I am also a member of the British Association of Equine Dental Technicians (BAEDT).

Over the last 2 years I have been the Chairman of the XLEquine executive and have enjoyed the promotion of clinical excellence and horse health care within XLEquine.

Andrew Robinson BVMS MRCVS

Andrew Robinson is a veterinary surgeon at Millcroft Veterinary Group in Cumbria.

I qualified from Glasgow Vet School in 1997 where I was badly bitten by a horse in my final year and said that I would never work with them, let alone put my hands anywhere near their mouths again! However, life in mixed practice in West Cumbria, and a short time in Herefordshire, has given me many opportunities throughout my career to successfully work with horses. I enjoy a varied caseload from vettings and castrations to the occasional foot trim on a zebra and officiating at the local Point to Point races. With my power rasp I now find myself spending a large proportion of my time with my hands in horses' mouths but only with a gag firmly in place! My practice also has a digital x-ray machine and flexible endoscope meaning I can fully investigate cases. When not at work I love spending time with my wife and daughters, enjoy watching Liverpool FC, run a local Foodbank charity and do some lay preaching.



Sarah Spencer BVSc MRCVS

Sarah Spencer is a veterinary surgeon at Belmont Veterinary Centre in Herefordshire.

A native of Vermont in the snowy northeastern USA, I came to the UK via New Zealand where I did my vet training. I qualified from Massey University in 2010 and spent 6 months as a large animal locum near my hometown. From there I travelled to the UK and spent 6 weeks on a tour of 10 XLVets practices and felt right at home in Hereford where I took up a position as a large animal assistant at Belmont Vets.

Much of my youth was misspent pleasure riding and eventing in rural Vermont, and more recently I have become involved in Endurance vetting. My greatest post-grad experience was vetting the Mongol Derby - 1000km across the Mongolian Steppe! I enjoy all the aspects of large animal medicine, particularly the challenges of equine dentistry and wound management. Outside of work my husband and I are involved in the Hereford Rowing Club where I am the ladies' Squad Captain.

SPRING EDITION

XLVets is a novel and exciting initiative conceived from within the veterinary profession. We are all independently owned, progressive veterinary practices located throughout the United Kingdom committed to working together for the benefit of our clients.

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THE EDITOR

Welcome to the 'Spring 2014' edition of Equine Matters...

...produced by XLVets Equine practices.

In this issue we focus on reproduction with articles on artificial insemination, breeding from the problem mare, foal diseases and embryo transfer. We also feature biosecurity with advice on nursing the infectious horse and two real life cases of infectious disease outbreaks.

With the overuse of antibiotics currently a hot topic within both the veterinary and medical worlds, we discuss what we mean by antibiotic resistance and the protocols our XLVets Equine practices have in place to protect you and your horse.

On behalf of XLVets Equine I would like to wish you all a happy and healthy 2014.

Lee Pritchard BVSc MRCVS
Calweton Veterinary Group

SPRING FEATURES

David Rowlands BVSc CertEM (Stud Med) MRCVS
Penbode Equine Vets, Holsworthy and Okehampton

Preparing the mare for breeding...

Breeding horses can be very exciting and rewarding. Early preparation is vital to help increase the chances of a successful pregnancy. This article is designed to help mare and stallion owners achieve success whether using artificial insemination (AI), which is permitted with non-thoroughbreds, or natural mating. This article highlights some key points to guide first time mare breeders and to act as an aide memoire to those with more experience.

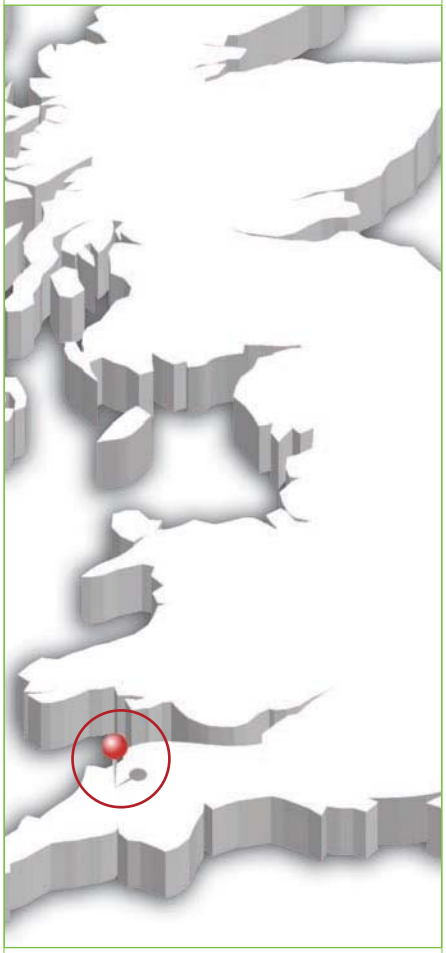
Good communication and teamwork

A cornerstone to successful conception of the mare is good communication and team work between mare owner, stallion owner (or holder of the frozen semen if this is to be used), and the overseeing veterinary surgeon. This communication cannot be started too early and can help avoid confusion and disappointment. A list of veterinary practices experienced in the insemination of chilled and frozen semen is produced by the British Equine Veterinary Association (BEVA).

Understand the breeding season of the horse

Most mares do not naturally show regular oestrus cycles until mid-March. This is because reproductive activity of the mare is dependent on sufficient day length. When breeding sport horses and even for National Hunt racing, the progeny will not be performing until they are four or five years old. Hence there is not the pressure to obtain early foals. The official start of the thoroughbred breeding season in the northern hemisphere is February 15th. Those breeding for thoroughbred flat racing are looking for early mating, so that the progeny are physically advanced compared with their contemporaries at yearling sales and when they reach the racetrack at two years old. Hence such mares are stabled under lights for 16 hours a day from the third week of December to artificially advance regular cycling. Typically mares are in oestrus (in season) for five days and dioestrus (out of season) for sixteen days throughout the breeding season.

Penbode Equine Vets since 1840



Veterinary Surgeon David Rowlands
XLVets Equine Practice Penbode Equine Vets

Establish the suitability of your mare for breeding

You should discuss this matter with your veterinary surgeon. A breeding plan can be individually tailored to your mare. The age of the mare and her previous breeding history are very important. Fertility declines with age. Mares that have had a foal at a young age sustain good fertility until later in life. Ideally maiden mares being inseminated with frozen semen for the first time, should be less than ten years old.

Your veterinary surgeon will be able to perform a clinical examination on your mare including ultrasonography of the uterus and ovaries, observation of the cervix by means of a speculum and examination of the conformation of the vulva and anus. A Caslick's suture may be required in some older mares. This is a relatively simple surgical procedure performed with the mare standing under local anaesthesic. This improves vulval conformation and helps prevent the sucking in of air and contamination from faeces. Pre-breeding cervical swabbing and blood sampling for potential infection can be done at this time. If breeding was unsuccessful last season your veterinary surgeon may choose to take an endometrial biopsy from the mare. This is another relatively simple procedure whereby a small sample of the lining of the uterus is examined under the microscope. This helps identify degeneration of the uterus which may reduce the chance of successful pregnancy.

Follow the Horserace Betting Levy Board (HBLB) Codes of Practice 2014

A copy of this document should be obtained from the HBLB by all mare and stallion owners via the website **www.hblb.org.uk**

This booklet sets out the voluntary recommendations to help breeders, in conjunction with their veterinary surgeons, to prevent and control specific diseases in all breeds of horses and ponies. The codes describe screening methods to detect important venereal diseases, including Contagious Equine Metritis (CEM) and Equine Viral Arteritis (EVA), by means of pre-breeding swabbing and blood sampling respectively. When talking to stallion owners or agents supplying semen ensure that they comply with the standards set out in this document.

Establish the availability and suitability of the stallion/semen

Establish the breeding history of the stallion that you propose to use. Ensure that his fertility has been proven by successful pregnancies. Some stallions have a competition schedule which limits their availability for covering mares and collecting semen for AI. This needs to be discussed in advance to prevent disappointment. If you are planning to use AI then check the type of semen available (this will be chilled or frozen). The pre-insemination protocol and timing of insemination is more critical with frozen semen. Enquire as to the progressive motility of the semen (Figure 1). Discuss all these facts with your vet. Some studs cannot collect semen over weekends due to staffing limitations or are restricted by the terms of a courier service. Beware of bank holidays which can again affect the logistics of semen collection and transportation. These are different for continental Europe so bare this in mind if ordering chilled semen from overseas. Stallion owners need as much notice as possible regarding the potential requirement of semen. Frozen semen can be sent to your veterinary surgeon well in advance and stored in a liquid nitrogen holding tank (Figure 2) ready for insemination. The timing of insemination relative to ovulation is more critical with frozen semen than chilled or natural mating. Good communication is essential.

Figure 1
Assessment of semen is an essential part of the insemination process

Figure 2
Frozen semen is stored prior to insemination in a liquid nitrogen tank

Ensure semen arrives with the correct paperwork

When talking to stallion owners/frozen semen agents, ensure that the semen will arrive with the relevant documents. The HBLB Codes of Practice detail the necessary labelling of semen containers and the health certificates that should accompany any transported chilled/frozen semen.

If this labelling and certification is incomplete or not present the identification, quality and disease free status of the semen cannot be guaranteed.

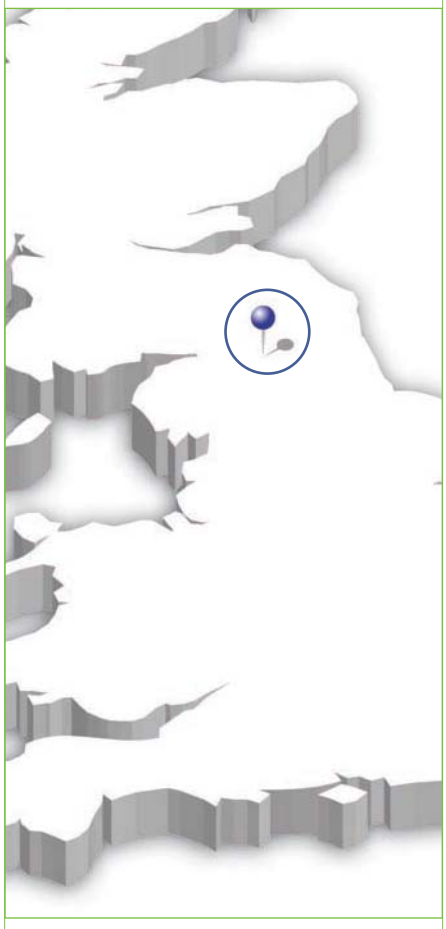
In summary...

Breeding your own foal can be hugely rewarding. Whilst this can seem both daunting and complex, your veterinary surgeon will be pleased to answer your questions and guide you through the process.

Liz Mitchell MA VetMB CertEP MRCVS, Scott Mitchell Associates

Breeding from the problem mare

Scott Mitchell & Associates VETERINARY SURGEONS



Veterinary Surgeon	Liz Mitchell
XLVets Equine Practice	Scott Mitchell Associates

The problem mare has below normal fertility. The pregnancy rate per cycle is on average around 65% with natural covering, 50% with chilled semen Artificial Insemination (AI) and 40% with frozen semen AI. This means many normal mares may take two or three cycles to become pregnant.

The role of the fertility of the stallion and correct timing of the mating or insemination cannot be underestimated. It is important to choose a stallion with a proven fertility record and ensure the mare is regularly examined or teased through her cycle to ensure the optimum timing for mating or insemination. With AI and in particular with frozen semen it is vital that insemination takes place very close to ovulation due to the limited lifespan of the semen. Provided that the stallion's semen is of adequate quality and the timing of mating/insemination is correct then fertilisation rates in the mare are very high (in excess of 90%) even in the older brood mare. It is an unfavourable environment in the uterus that is often responsible for the loss of the early embryo leading to the much reduced pregnancy rates at first scan. The treatment of the problem mare is usually aimed at improving the uterine environment.

The uterine environment

The uterus is protected from the outside world by three important seals: the cervix, the vestibular seal and the vulval lips. Each of these has an important role in preventing the entry of unwanted bacteria and air from the outside to protect the uterus from infection. It is also necessary that these structures: allow entry of the stallion's penis if natural service is used; allow the exit of the inflammatory fluid and bacteria that inevitably follow a mating/insemination; stretch to allow the passage of the foal during the birth process.

Vulval abnormalities

Some mares, in particular thoroughbreds, older mares and those in poor body condition have sloping vulval conformation. Faeces are deposited into the vulva and commonly some air and bacteria are sucked in leading to a continuous and low grade infection within the vagina. This can spread upwards to cause inflammation in the uterus (endometritis). Caslick's sutures can be inserted into the vulval lips to provide an artificial seal and help prevent the entry of bacteria and air.

Vaginal abnormalities

In some mares, particularly following foaling, the vagina may slope towards the cervix and lead to urine pooling in this area. This causes a chemical irritation and inflammation of the vagina and uterus.

Cervical abnormalities

The cervix may be torn or damaged during a previous foaling. The absence of an effective seal at the cervix contributes to fertility problems. There is no specific treatment but the condition may improve over time. In older maiden mares the cervix may be firm and fibrous and fail to relax adequately when the mare is in season. This may prevent a successful mating and can also prevent the normal release of fluid and bacteria from the uterus following mating, leading to fluid accumulation in the uterus (post covering endometritis). In some cases the cervix can be manually dilated when the mare is in season to assist with this problem.

Uterine abnormalities

Endometritis

Endometritis is the inflammation of the lining of the uterus (endometrium) with the presence of fluid and/or bacteria. This is the most common cause of reduced fertility in the mare. The factors that contribute to the development of the condition are failures in the vulval and cervical seal and the failure to clear inflammatory fluid and bacteria present in the uterus following mating/insemination or foaling. Some older mares develop a very marked reaction in the uterine lining associated with being in season and have poorer uterine clearance mechanisms; these mares tend to accumulate more fluid in the uterus during their season and following covering which can affect their chances of becoming pregnant.

A diagnosis of endometritis is made on detection of fluid in the uterus on rectal ultrasound scan and/or the presence of bacteria and inflammatory cells on endometrial swabs and smears.

Susceptible mares should be treated as follows:

Prior to covering/insemination:

- swabs and smears to identify venereal disease and endometritis;
- ultrasound to detect free fluid in the uterus (treated with prostaglandin and/or oxytocin injections);
- bacterial contamination additionally requires lavage of the uterus with saline or antibiotic solution.

At covering/insemination:

- single correctly timed mating or preferably AI;
- repeated examinations and the use of an injection to stimulate ovulation at a fixed time will assist with the correct timing;
- AI reduces the quantity of fluid and bacteria introduced to the uterus.

Following covering/insemination:

- ultrasound scans to detect the presence of fluid in the uterus and assess response to treatment;
- treatment with antibiotics, lavage and repeated oxytocin injections.

Fertilisation takes place in the oviduct and the fertilised embryo does not descend into the uterus until day four to six. There is therefore a four day window following ovulation in which the uterus can be treated in order to optimise the conditions for the development of the pregnancy.

Chronic or repeated endometritis can lead to degenerative changes in the uterine lining known as endometriosis. Diagnosis is made using a uterine biopsy and the prognosis for future breeding is poor.

Endometrial cysts

Older mares that have had foals previously often develop cysts in the lining of the uterus, these can sometimes be confused with an early pregnancy so it is important that they are charted and measured and monitored closely. In large numbers, cysts may affect fertility by impeding the movement of the early pregnancy and reducing the area for attachment of the placenta. Large cysts can be treated using laser surgery.

Other causes of fertility problems

Abnormal cycling

Prolonged spring transition

Most mares' ovaries become dormant for a variable period of 3-8 months during the winter, and early in the stud season may not have commenced normal cyclical activity. The change from non-cycling to cycling ovaries is called the transition phase and during this time mares typically have prolonged but weak signs of being in season and these seasons are often not associated with the release of eggs.

The use of artificial lighting, a rising plane of nutrition and the use of hormone treatment can hasten the onset of cycling.

Ovarian tumour

An ovarian tumour called a granulosa cell tumour can prevent normal cycling. In some cases mares show persistent oestrus (in season) or stallion-like behaviour but do not ovulate or become pregnant. These can be suspected on rectal ultrasound scan examination and confirmed with a blood sample for hormone analysis. Following the surgical removal of the affected ovary, the mare will usually resume normal cycling on the remaining ovary.

Chromosomal abnormalities

Rarely some mares never develop functional ovaries due to genetic/chromosomal abnormalities.

Venereal disease

Venereal disease screening (involving the collection and testing of swabs and blood samples) of mares and stallions should always be performed prior to any breeding activities. This will rule out important and highly infectious causes of infertility. Most reputable studs will have a strict policy in place and this is encouraged by the veterinary profession.

Rectal ultrasound examination is a vital part of investigation and management of the problem mare

Investigation of problem mares include:

- examination of vulva, vagina and cervix (with aid of a speculum);

A speculum allows a visual assessment of the cervix - an important seal that protects the uterus

- manual and ultrasound evaluation of reproductive tract;
- culture and cytology of endometrial swabs for bacteria/fungi and inflammatory cells;
- biopsy of endometrium;
- endoscopic examination of uterus;
- blood sampling for hormone profiling.

Optimise fertility:

- arrange a pre-breeding examination including swabs and blood tests to detect any potential problems and rule out infectious disease;
- correct any conformational abnormalities e.g. using Caslick's sutures;
- begin in April or May with mare in lean body condition on good grass;
- use a single carefully timed service or preferably artificial insemination;
- avoid the foal heat;
- arrange for an ultrasound examination of the uterus following service/ insemination to allow detection and treatment of endometritis.

Lee Pritchard BVSc MRCVS Calweton Veterinary Group

Embryo transfer

Embryo transfer, although first reported in mares as early as the 1970's has only become routine over the past decade as its popularity has increased. It is now widely accepted by a number of studbooks in the UK (with the exception of Weatherby's).

What is embryo transfer?

Embryo transfer is the procedure by which an embryo is removed from the uterus of a donor mare and placed into the uterus of a recipient mare. The recipient mare then carries the pregnancy through to foaling.

Embryo transfer is most often used for two reasons:

- **The first** is for those mares that are competing at a high level, providing a means of breeding foals from these elite mares without affecting their competitive careers or starting their reproductive career at a later age when fertility is generally reduced.

- **The second** is for those mares that have a medical condition that would put the mare, the foal or both at risk by carrying a foal to term. In some cases it can allow mares to produce more than one foal in a season.

What does the procedure involve?

The procedure for embryo transfer starts with insemination of the donor mare; this can be done by natural covering or with chilled or frozen semen via artificial insemination. On day 7 or 8 after insemination the embryo is flushed out of the donor mare's uterus and transferred to the recipient mare. This 'flushing' involves the introduction of a catheter through the cervix and concurrent manipulation of the uterus rectally. The transfer into the recipient mare can be carried out surgically or non-surgically. Non-surgical transfer involves the placement of the embryo into the recipient mare through the cervix into the uterine body. Surgical transfer is carried out standing under sedation and an incision made into the abdomen via the flank; one horn of the uterus is located and a small puncture made to allow insertion of the embryo; the incisions are closed and box rest for 5-7 days is often instigated to monitor general health and the incision site. In the past, higher success rates with surgical transfer had been reported but this is no longer the case and non-surgical transfer has the advantages of reduced expense and less post-transfer complications.

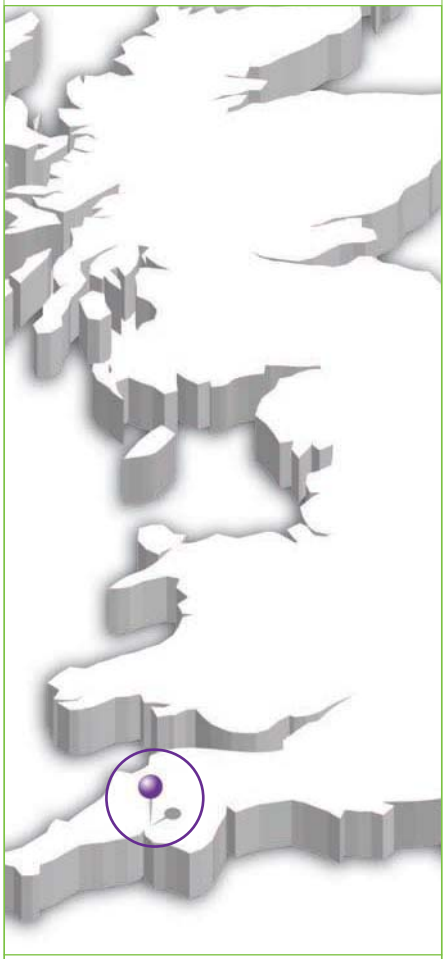
How successful is embryo transfer?

Reports are variable and there are a number of factors affecting the success rate of embryo transfer; these include the fertility of the donor and recipient mare, the stallion used and the experience of the personnel involved. Reported embryo recovery rates vary between 50 - 70% and pregnancy rates between 60 - 80%. Pregnancy rates will fall if the fertility of the donor/recipient/stallion is poor, the staff involved are inexperienced and the ovulation is not timed well between the donor and recipient.

Conclusion

Embryo transfer is continuing to grow in popularity in the UK and has the potential to improve reproductive performance in mares.

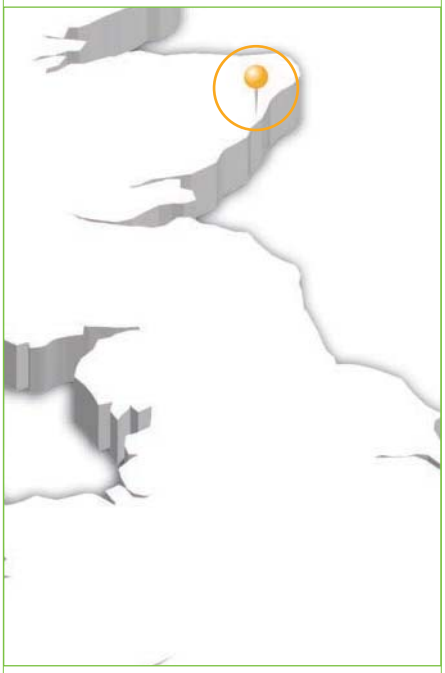
For more information on this or other reproductive techniques contact your XLVets Equine practice for more details.



Veterinary Surgeon	Lee Pritchard
XLVets Equine Practice	Calweton Veterinary Group

Graham Hunter BVM&S GPCert(EqP) CertEP CertAVP(ESO) MRCVS,
Ardene House Veterinary Practice

Recent advances within the veterinary industry



Veterinary surgeon	Graham Hunter
XLVets Equine practice	Ardene House Veterinary Practice

One of the most significant advances in the equine veterinary industry in recent years isn't an exciting new surgical procedure, it is not an amazing new piece of equipment or a revolutionary drug appearing on the market, but it is a simple laboratory test called PCR analysis.

PCR stands for Polymerase Chain Reaction and is a biochemical procedure which helps us look for pieces, or sequences of DNA. PCR analysis can pick up tiny pieces of this material and whether it is viable or not (i.e. alive or dead); the analysis procedure replicates it to produce measurable quantities for reliable detection and identification. Although PCR was developed 30 years ago, its application in equine medicine to look for disease has only recently become readily available to all vets in general practice.

In the human medical field it is used to look for hereditary diseases and for paternity testing. It is also used in forensics to look for DNA at a crime scene or on a murder weapon. It was indeed PCR analysis that recently found horsemeat in our burgers. We don't use PCR for such exciting newsworthy matters in the equine veterinary world but we use it for rapid disease identification.

PCR analysis has helped us to identify pathogens (bacteria, viruses etc) very quickly, often in less than 48 hours. It also helps us to identify if a horse is excreting the pathogen and whether it could be infectious.

Examples of diseases where we use PCR testing:

Paralytic Herpes (EHV-1)

The equine herpesvirus can behave like cold sores in people, i.e. it can hide and sit in a latent form. The virus sits hidden in large numbers of horses but can reactivate under periods of stress. EHV-1 can cause paralytic herpes where the nerves of the spinal cord are attacked. Six significant UK outbreaks have occurred in the past 14 months and all have involved PCR testing of the cerebrospinal fluid giving a rapid diagnosis and control of the spread of this often fatal disease.

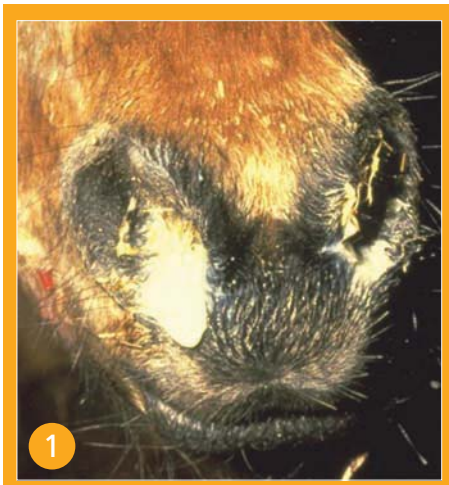
Strangles

PCR testing on swabs or washes can very accurately and rapidly detect the bacteria Streptococcus equi, the highly infectious cause of strangles. The faster the diagnosis is made the quicker isolation can be undertaken, biosecurity measures can be implemented to limit the spread of the disease and reduce the number of horses affected.

'Rattles'

Bronchopneumonia in foals can be caused by Rhodococcus equi and is often called rattles or summer pneumonia. It is difficult to treat and often requires a prolonged course of multiple antibiotics. The speed of diagnosis in these cases is often a crucial factor in the success of treatment. A rapid negative result is also important so that excessive use of inappropriate antibiotics does not occur.

PCR testing is considerably faster and more accurate than traditional culture techniques and has helped us diagnose and control some of the most important equine infectious diseases we have in the UK.



PCR can be used to identify a number of infections such as those causing respiratory infection (1) and Lawsonia intracellularis (2) (Photos courtesy of Celia Marr, Rossdales Veterinary Surgeons)

Laura Morton BVSc MRCVS, Calweton Veterinary Group

Foal diseases

The time of foaling and the presence of a newborn foal around can be very exciting, but it can also be a worrying time if things start to go wrong. Foals can suffer from many diseases and are particularly susceptible to infection at the start of their life. Diseases can progress quickly, and many are life-threatening if left untreated. Starting treatment when the foal is still bright carries a better prognosis than waiting until he/she is flat and recumbent before medical help is sought. Clinical signs can be very subtle in the early stages of disease; for this reason routine *post partum* check of the mare and foal by a vet can be a good way of detecting abnormalities early.

This article will concentrate on diseases affecting foals in their first few weeks of life.

Veterinary Surgeon	Laura Morton
XLVets Equine Practice	Calweton Veterinary Group

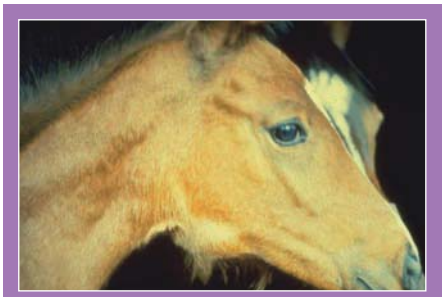
Prematurity/Dysmaturity

Foals born before 320 days of gestation are classed as premature. These foals are likely to have a lower than normal birth weight and show physical abnormalities such as a domed head, floppy ears and a short, silky hair coat. Survival rates are extremely poor even when intensive care is undertaken. Dysmature foals are born at full term but also show physical abnormalities such as those described; due to inadequate maturation they too are unlikely to survive.

Failure of passive transfer

Most newborn foals will develop their suckling reflex within 20 minutes, be standing in around 1 hour and starting to nurse from the mare by the time they are 2 hours old. Early nursing is particularly important as the cells that absorb colostrum within the foal's gut have a lifespan of just 24 hours, and maximum absorption occurs within the first 6-8 hours of life. Whilst the foal is in utero it does not receive any maternal antibodies so transfer of these after birth via the colostrum is essential. Failure of adequate transfer of colostral antibodies is known as 'failure of passive transfer' (FPT). Foals that do not intake sufficient volumes of colostrum are at risk of FPT. Foals that have ingested poor quality colostrum. Dams that are not in good health themselves or those that have run milk prior to foaling may have sub-optimal quality colostrum. In these cases donor colostrum may be used to feed the foal.

FPT puts the foal at a hugely increased risk of developing septicaemia or other infections and diseases. A blood test can be used 12-18 hours after birth to check the IgG status of the foal; this will allow assessment of whether sufficient antibodies have been absorbed by the foal, and if not then treatment can be started to correct this.



Failure of passive transfer puts the foal at greater risk of other infections or diseases

Rhodococcus equi infection (Photos courtesy of Celia Marr, Rossdales Veterinary Surgeons)

Septicaemia

Aside from FPT, risk factors for development of septicaemia include infection/ inflammation of the dam's placenta (placentitis) and a dirty foaling environment. The main portals of entry for bacteria into the bloodstream are via the umbilicus, intestines or lungs. Affected foals are likely to be very sleepy, feed less frequently if at all and their condition can rapidly deteriorate. Where septicaemia is suspected antimicrobial treatment should be started immediately, as the prognosis is much better with early treatment. Many foals will require aggressive therapy, and often hospitalisation with round the clock nursing is necessary.

Neonatal Maladjustment Syndrome (NMS)

NMS is a syndrome where foals exhibit neurological and behavioural abnormalities - the cause of which is not known. It is thought to occur as a result of lack of oxygen before, during and/or after birth. NMS may be evident as soon as the foal is born, however some animals appear normal for a few hours up to a few days before showing clinical signs. Clinical signs can be very variable, ranging from mild signs such as an abnormal suckle reflex, stargazing and facial spasms, through to more severe signs such as being unaware of the environment, blindness and seizures. In milder cases foals can be nursed at home and will recover over a period of a few days, but more severe cases require hospitalisation and the prognosis can be more guarded.

Meconium impaction

Meconium is the name given to the first faeces that newborn foals pass. It is made up of intestinal secretions, swallowed amniotic fluid and cell debris, and is usually a dark brown colour of sticky paste consistency. In a healthy foal meconium is passed within the first 24 hours of life; failure to do so can lead to impaction. Early signs can be subtle and may only be an increased amount of time spent lying down and less time spent nursing. Other signs that foals show of abdominal pain include stretching out while laid down, restlessness, flank biting/watching, pawing, kicking at their abdomen and frequent straining to defecate - a classical sign for the latter being tail swishing. If the impaction is not relieved then abdominal distension will become evident.

Ruptured bladder (Uroperitoneum)

A ruptured bladder can be a congenital defect, or more commonly the result of excessive pressure on a distended bladder during birth. Affected foals will find it difficult to pass urine, and dribbles of urine may be seen along with frequent straining.

Surgical repair of the tear will be required in these cases, but stabilisation of the foal prior to surgery is critical.

Diarrhoea

Diarrhoea is commonly seen in foals in their first few months of life. The possible causes of diarrhoea in the newborn include NMS, foal heat diarrhoea, necrotising enterocolitis, clostridial infection, rotavirus and cryptosporidium. It may be necessary to perform further diagnostic testing such as blood sampling and faecal analysis to determine the cause in individual cases. All foals with diarrhoea will require supportive care to ensure they do not become dehydrated or undernourished. Other therapies such as antimicrobials and anti-inflammatories will be case dependent. Until proven otherwise foals with diarrhoea should be treated as potentially infectious and appropriate biosecurity measures implemented.

Conclusion

Many diseases in the first few weeks of life have the potential to be life-threatening and individuals can deteriorate rapidly. If you have any concerns during this time you should contact your veterinary surgeon immediately.

Anna Jesse MA VetMB MRCVS, St Boniface Veterinary Clinic

Peak performance: Show-jumping

We asked the experts for tips on achieving peak performance in show-jumping

St Boniface Veterinary Clinic

Veterinary surgeon	Anna Jesse
XLVets Equine practice	St Boniface Veterinary Clinic

How do veterinary problems impact on show-jumping peak performance and how can they be prevented?

The athletic demands placed on the elite show-jumper are huge. A successful show-jumper must be able to jump large fences with precision and care, often at speed. The horse must be supple and able to make sharp turns, jump from a virtual standstill whilst also being able to jump at gallop. It must have tremendous strength in the back and hind-limbs to be able to adjust stride length and jump from 'deep' and still create a natural arc as it jumps.

The majority of modern, successful show-jumpers are naturally well balanced, loose-moving athletes. As any top show-jumper/trainer will tell you there is no single conformation type that makes a good show-jumper. The hind-quarters are critical to creating an upward trajectory - people tend to look for horses with a 'strong' back (usually not too long in the back), a low stifle (able to create greater scope) and hocks that are not too upright. The front of a successful show-jumper must be able to lift the knees high and out of the way, with a high neck and head to allow excellent balance and vision.

The stresses placed on the hind-limbs at take off and the fore-limbs on landing are enormous and there is immense tension placed through the joints when making quick turns. The common areas causing lameness in show-jumpers are those under significant stresses and strains. These include the fetlock in the fore-limb and the hock in the hind-limb; the sacroiliac joint (Figure 1) of the back; the tendons/ligaments that comprise the 'stay' apparatus of both hind and fore-limbs; and foot pain.

Figure 1: Sacroiliac joint medication

Common lameness conditions seen in the show-jumper

- **Foot pain,** often resulting from damage to the bony, ligament or tendon tissues of the foot.
- Foot pain in the front feet is often related to navicular bone damage or a combination including injury to the Deep Digital Flexor Tendon (DDFT), navicular bursa and navicular support ligaments.
- Inflammation and arthritis of the pastern, fetlock and hock.
- Injury to the Superficial Digital Flexor Tendon (SDFT) and DDFT.
- Inflammation of the suspensory ligament (suspensory desmitis), particularly in the hind-limbs.
- **Back and neck pain,** Most commonly of the sacroiliac joint (the connection between the vertebral column and the pelvis).

Prevention of lameness

When discussing peak performance and specifically preventing injuries, one of the most important roles in running a competition yard is to build an effective team. This revolves around the rider and their horses but also involves trainers, veterinary surgeons, farriers, physiotherapists and nutritionists.

There are a number of methods employed to prevent lameness; poor foot balance is a huge contributor to poor performance and lameness so regular shoeing is a must. Following a fitness plan is essential, too many horses are pushed too quickly, breakdowns occur and they are often left suffering from long-term unsoundness. Choosing appropriate surfaces to exercise on is important in protecting their legs; protecting a horse's legs from shock and impact will help keep them sound and there are a huge variety of products on the market to help.

Andrew James DipWCF, Show-jumper and farrier, Bodmin, Cornwall

In the sport of show-jumping how do training and talent influence 'peak performance'?

A potential show-jumper should have a good natural rhythm and conformation; some just find it easier than others. A horse with a good mental attitude and enthusiasm for work makes them easier to train and allows for better performance. At the end of the day the horse has to perform for 2 minutes so everything is aimed at peak physical performance and power for a short period of time.

Most young horses are started at three years old with predominantly flatwork, jumping starting at home as a four year old with the aim to be competing as a four and a half year old. Perhaps we are pushing these horses too hard too quickly but they have to be pushed in order to get to the stage that's expected of them.

As a show-jumper I focus on the back end, the most important gait is canter and I work on lots of length followed by collection. It is important to maintain variation in their work in order to keep them fresh.

What role does farriery play in achieving show-jumping 'peak performance'?

Most show-jumpers have good hoof quality as they are well managed and well fed. Their general management means they don't really lose shoes so you can often shoe with good length, width and support.

Foot balance is key to achieving peak performance; foot balance is the state whereby the hoof wall, sole, frog and bars are prepared so that an equilibrium exists around the DIP joint, with a shoe placed on the foot, providing maximum base of support while still minimising stresses and leverages to the lower limb, both statically and dynamically. Clearly, poor foot balance will alter the stresses and leverages through the limb leading to a reduction in performance.

Studs are essential for show-jumping, usually two in each unless they are prone to treading on themselves. If studs are not used and they slip this is a common reason to lose confidence and so a reduction in performance.

Louise Towl BSc(Hons) MCSP PG Dip Vet phys ACPAT, Chartered Veterinary Phyisotherapist, Devon

What role does physiotherapy play in achieving show-jumping 'peak performance'?

Whether show-jumping is your hobby or livelihood, achieving the best performance each time you compete is important. Having the help of a Chartered Veterinary/ Animal Physiotherapist can be very important. Detection of small problems can prevent them from becoming major problems, and seemingly minor weaknesses or asymmetries in the horse's way of working can be corrected.

Horses' like people, are usually slightly one sided. So, for example, by improving flexibility or strength, the ability to turn tightly into a fence or shorten/lengthen for difficult distances can be improved. Manual treatments and regular stable exercises are important, but schooling exercises such as rein-back into trot, turn on the forehand and more challenging pole exercises are excellent for strength and co-ordination. For more specific muscle or joint targeting, taping and theraband can be utilised to great effect, but should not be used without prior guidance.

Claire Hodgson BVetMed Cert AVP(EM) MRCVS, Wright & Morten

Principles and failures of biosecurity

Biosecurity is a set of management practices that help minimise the potential for the spread of infectious disease-causing agents between individual horses. It is something that both individual owners and yards MUST be equally responsible for. There are many infectious diseases common to the UK such as: *Streptococcus equi* 'Strangles', Equine Influenza (EI), Equine Herpesvirus (EHV), salmonella and 'ringworm'.

Principles of biosecurity

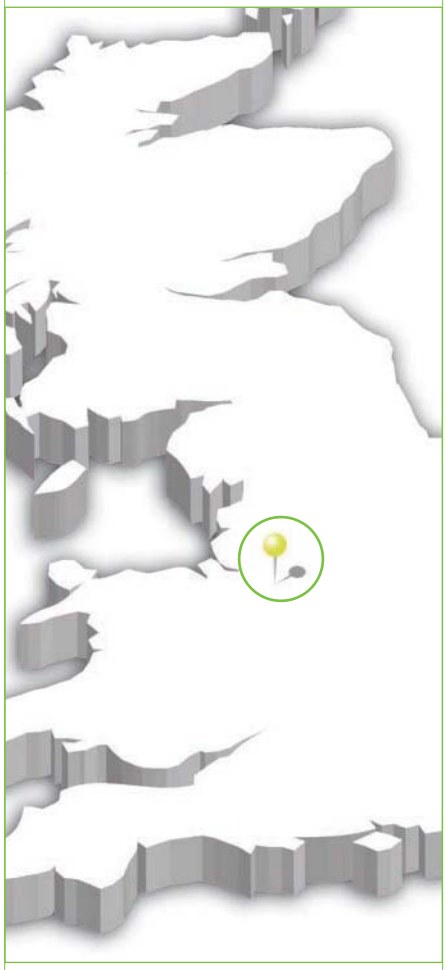
The prevention of infectious disease relies on three main factors:

- good hygiene practice and knowledge of the signs of common infectious diseases;
- strict policies for the introduction of new horses onto a yard;

- use of vaccination policies where appropriate.

Simple things make a big difference in preventing infectious disease:

- wash hands before and after handling horses;
- don't share tack, grooming equipment or feed/water buckets;
- regularly clean mangers, water troughs/drinkers, tack, rugs and vehicles used for transport;
- individuals caring for horses should know the signs of infectious disease and monitor their horse's behaviour and signs daily;
- when away from home minimise direct contact with other horses and avoid sharing water/feed/nets.



Veterinary surgeon Claire Hodgson

XLVets Equine practice Wright & Morten Veterinary Surgeons

Basic biosecurity for new arrivals

- Isolate all new arrivals for a minimum of three weeks, ideally with limited shared airspace and downwind of the main barn (some diseases are airborne) (Figure 1).

Figure 1: Stabling for isolation should be at least 10-20 metres from other stables

- Ensure horses in isolation facilities are cared for by separate staff or after other horses (Figure 2). Hands and boots should be washed before leaving the isolation area.

Figure 2: Infected horses should be treated by one staff member only

- All new horses should be up to date with 'flu vaccines. Horses not previously vaccinated or whose vaccinations have lapsed should complete the primary vaccination course (first two vaccines) prior to moving from isolation to the yard.
- A strangles blood test with negative result must have been carried out in the week prior to moving to the yard.
- Ensure each horse has dedicated equipment and tack to prevent the potential spread of infection between horses.

Failures of biosecurity

Failures of biosecurity result in disease spreading from one infected individual to many within the same yard and beyond.

Unfortunately this commonly occurs as a result of a failure to quickly recognise the potential problem and poor communication between individuals with a sick animal and those in contact.

Just like people, horses will get sick because they go out and mix with other horses at competitions and social events. Many animals can carry an infectious disease but not be obviously ill, so even if your horse is the first to get sick it does not follow that they definitely brought it onto the yard. When an infectious disease such as 'Strangles' is suspected people often hope there is a less serious cause and carry on as normal to avoid any associated panic. If you are unlucky enough to have an infectious disease, ignoring the problem at the beginning will only increase the number of horses infected and prolong the length of time the yard is affected.

If your horse or any other on the yard displays any of the following signs they should be brought in and isolated in their stable and the yard owner and vet informed immediately:

- fever (high temperature)
- cough
- nasal discharge
- diarrhoea
- incoordination
- abortion.

Following examination your vet will collect diagnostic samples and discuss the likelihood of an infectious disease and the action needed to limit its spread. The most important aim of quickly controlling an infectious disease outbreak is to limit the spread of the disease from infected animals to healthy.

The following steps should be taken

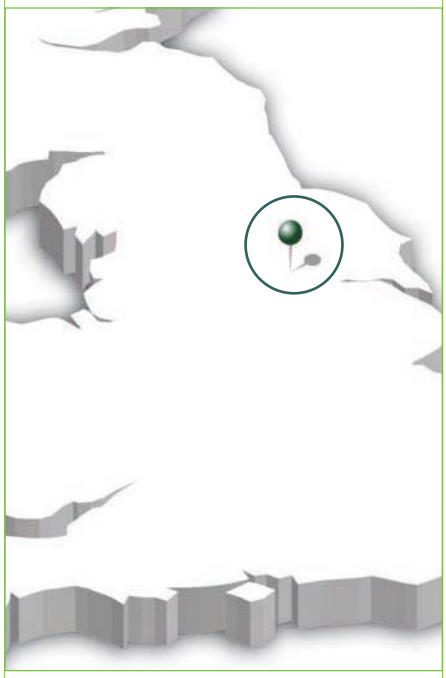
- **The yard must be closed:** No horses should be allowed to leave or new horses to enter; all visiting professionals and tradesmen should be alerted.
- Infected horses should be isolated and barrier nursed.
- Animals should be separated into risk categories: infected, in-contact with infected and not in-contact; all groups should be monitored closely for signs of disease.
- Vaccination in the face of an outbreak is not always appropriate but may be recommended in some cases.

Figure 3: Vaccination is an important part of disease control

Good biosecurity need not be complicated but can be the difference between considerable stress and expense and a short, controlled outbreak.

Gemma Dransfield MA VetMB CertEP MRCVS Minster Veterinary Practice

Case Study: Strangles



Veterinary surgeon	Gemma Dransfield
XLVets Equine practice	Minster Veterinary Practice

Figure 1: A nasopharyngeal swab and bacterial growth media required to diagnose Strangles infection.

'Bob' a four year old cob was presented to the practice as he was not eating and had a snotty nose.

When examined he had a thick nasal discharge and swollen glands (lymph nodes). His temperature was 41°C but he was otherwise normal. A new horse had recently been brought onto the yard with a mild nasal discharge but was otherwise healthy. Strangles was immediately suspected and so a nasopharyngeal swab (Figure1) was taken from Bob and the new horse, to confirm the disease. The swab was passed through the nostril close to the back of their throats and they were made to swallow. The livery yard owner was advised on the likelihood of a strangles outbreak and so the yard was closed immediately and a strict biosecurity regime was instigated. Results from both swabs confirmed strangles 48 hours later.

Strangles is a bacterial respiratory infection caused by Streptococcus equi. It causes abscesses to develop primarily in lymph nodes and is spread by direct contact with nasal discharge (nose to nose touching of horses or on contaminated water buckets, clothing and tack etc) and is, uncommonly, fatal.

Bob was treated with anti-inflammatories for three weeks. No antibiotics were given as is often the case when abscesses have developed; these were encouraged to burst by hot compressing.

All horses on the yard were divided into three groups:

1. infected horses, such as Bob;
2. in-contact, horses that had been in contact with horses in group one;
3. non-contact, horses that had not been in contact with horses in group one.

Other owners on the yard were advised to take their own horse's temperatures twice daily. If a temperature was noted above normal (38.5°C), antibiotics were administered immediately. A high temperature is the first clinical sign of strangles; if observed promptly antibiotics can be administered before abscesses develop. Any horse that developed a high temperature was moved into group 1.

Horserace Betting and Levy Board (HBLB) codes of practice advise Veterinary Surgeons (Figure 2) that three negative nasopharyngeal swabs taken one week apart, or one negative guttural pouch wash are necessary from every horse in group one before the yard can be opened. Tests began six weeks after the last horse in group one developed a temperature. At this time all horses including Bob appeared healthy.

A guttural pouch wash is taken by passing an endoscope into the guttural pouch via the horse's nose. It is an important space, housing major vessels and nerves where the bacteria can 'hide' in low numbers. Saline was flushed into and drawn back out of both the left and right pouches of all horses in group one, followed by an infusion of penicillin. Samples were then tested for Streptococcus equi. Endoscopy of Bob's left guttural pouch revealed chondroids (Figure 3), these are dried pus-like structures that contain low numbers of bacteria.

The chondroids were eventually 'dissolved' and removed by repeatedly infusing a mucolytic drug into the guttural pouch. A final wash was taken from Bob 4 months after he was diagnosed with strangles and declared he was negative. All other horses on the yard were negative at the initial guttural pouch wash. Bob was the worst affected by the disease and took the longest to recover. However, the following year he was back in the show ring with no signs that he had been so ill the previous year!

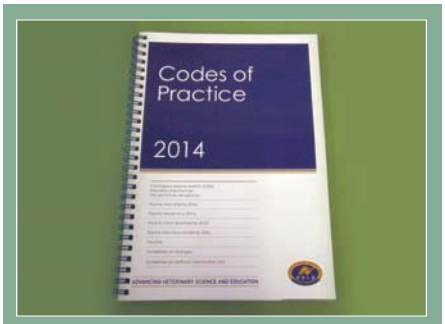


Figure 2: The HBLB codes of practice that Veterinary Surgeons follow when treating a Strangles outbreak on a yard.

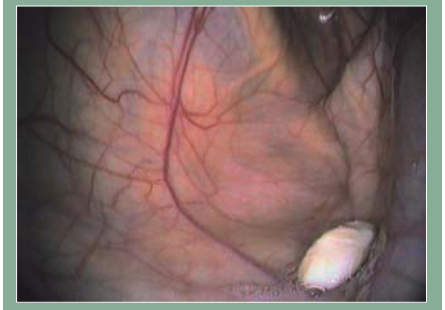
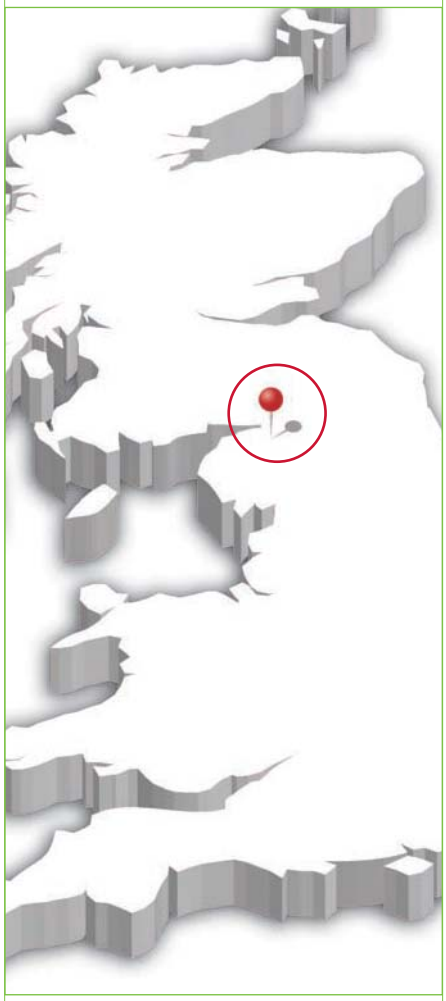


Figure 3: An endoscopic view in a horse's guttural pouch. The large white mass is a chondroid.

Paul May BVMS MRCVS Paragon Veterinary Group

Case Study: Equine influenza



Veterinary surgeon	Paul May
XLVets Equine practice	Paragon Veterinary Group

Dandy, an eight year old 16.2hh gelding had been stabled on a competition yard for four years and was coming back into work after recovering from a tendon injury.

During his convalescence from the injury he had missed a booster dose of influenza vaccine so had been restarted to bring his immunity up to date. At the time of his illness he had received the first of the two influenza vaccinations required to restart.

Dandy became ill one afternoon, presenting to the owners as a case of colic. He was uneasy, wanting to lie down and digging at his bed. An examination by the vet found that his heart and respiratory rates were significantly increased, he was quite uncomfortable but he was passing droppings. He was found to have an enlarged spleen which was unusual, but more significantly he had a raised temperature. He was treated with antibiotics and an anti-inflammatory (pain relief) and with this treatment, he settled down nicely. He was moved immediately into quarantine away from the other horses in case of a transmissible infectious disease.

Over the next few days Dandy recovered well but took time to come back to full appetite. He never coughed and developed only the slightest of discharges at his nose (Figure 1). At this time the younger horses on the yard developed nasal discharges and some began coughing on exercise. Their exercise was reduced and they were put onto medication until they improved.

Figure 1: Little discharge despite evidence of influenza infection

Blood samples were taken from Dandy at the time he first became ill, and they showed changes that could be consistent with a viral challenge. All of his other biochemistry tests were in the normal range. As he had lost quite a lot of weight during his illness and he was anaemic, it was decided to turn him away for some time.

The spring grass had started to come through and all agreed that turnout to pasture would be the best for him (Figure 2).

Figure 2: Rest and nutrition are vital for recovery

His blood test was repeated a month later and the samples were sent to the Animal Health Trust Laboratory. There they can carry out a screening for viruses to look for possible causes for this illness. Comparing the two samples showed a significant rise in the antibody level to a particular strain of the Equine Influenza virus. This evidence was sufficient to suggest that the yard had been affected by the influenza virus.

It was assumed that the level of protection was good enough in most of the horses to prevent them from showing signs of illness and the vaccine being used did cover the strain of virus in question. It is not unusual for young horses in this situation to show the worst signs but what was alarming was how little protection Dandy appeared to have. The gap in his vaccination programme allowed the virus to overcome what protection he had. It took several months for him to put the weight back on but, happily, he has made a full recovery. The yard owners have had to consider the impact of the influenza virus on the performance of their horses. Needless to say there have been lessons to learn, particularly in this case with a horse that was away from the yard at the time that his vaccination was due.

NURSING FEATURE...

Marie Rippingale BSc(Hons) DipHE CVN DipAVN(Equine) REVN Scarsdale Veterinary Group

Nursing the infectious horse

ScarsdaleVets Equine

Veterinary nurse	Marie Rippingale
XLVets Equine practice	Scarsdale Veterinary Group

There are occasions when a patient may need to be isolated for treatment of an infectious disease. The term isolation describes the physical separation of an animal suspected of having or proved to have a transmissible infectious disease.

There are different types of isolation

- **Barrier nursing**

Creates a barrier between the infectious animal and the owner, nursing staff and other animals (e.g. wearing protective clothing, using separate equipment).

- **Protective isolation**

Provides isolation of very susceptible animals (e.g. very young or very old, after surgery, or with compromised immunity) in an attempt to protect them from potential sources of infection.

- **Reverse barrier nursing**

Is often employed with neonatal foals suffering from failure of passive transfer (failure of transfer of immunity from the mare). In this case the foal is being protected from outside sources of contamination e.g. owners, nurses and other patients rather than the other way around.

Figure 1

Isolation facilities

Veterinary isolation facilities tend to be built at least 50 metres away from the main hospital and stables. Maintaining a safe distance is very important as diseases such as the influenza virus have been reported to be propelled in excess of 31 metres in droplets from a coughing animal. On a yard, a stable as far away as possible from other horses should be used, even if this means emptying out a barn and using it just for the one horse. A completely separate set of feeding, watering, tools, grooming and veterinary equipment should be used. This helps to prevent the transmission of pathogens on inanimate objects or 'fomites'. Barrier clothing is also very important; disposable protective overalls, boot covers, hats and latex gloves should be used every time someone comes into contact with the isolated patient (Figure 1). Hands should be washed thoroughly after contact with the horse even though gloves are worn. Foot dips and mats filled with disinfectant should be situated outside the stable to help prevent the spread of disease. The area surrounding the stable should be roped or taped off to keep other people a safe distance away (Figure 2). Signs should also be put up detailing the area is subject to restricted access.

Figure 2

Equine contagious diseases

The following are a few examples of equine infectious diseases that are encountered in the UK.

- **Equine influenza**

Causes upper respiratory tract disease.

- **Equine Herpesvirus 1 and 4 (EHV-1, EHV-4)**

Both forms cause respiratory disease. EHV-1 also causes abortion, neurological disease and eye conditions.

- ***Streptococcus equi* (strangles)**

Causes respiratory infection.

- **Salmonella**

Causes colic, diarrhoea and weight loss.

- **Ringworm**

Causes patchy hairloss.

- ***Rhodococcus equi***

Causes respiratory infection in foals aged 1-6 months old.

- ***Lawsonia intracellularis***

Causes rapid weight loss, lethargy, inappetance, throat latch and limb oedema, mild colic and diarrhoea in weanlings.

- **Rotavirus**

Causes diarrhoea in foals aged three days to five months.

Nursing the equine isolation case

The most common condition that requires barrier nursing is *Streptococcus equi*. or 'strangles'. Every effort is made to treat the patient at home, however if the patient cannot be successfully isolated at the yard it may be admitted into a veterinary hospital for treatment. 'Strangles' is caused by a bacterium, *Streptococcus equi*. and this is spread from horse to horse as well as tools, equipment, tack, owners and their clothing.

Clinical signs

- increased temperature
- depression
- reduced appetite
- nasal discharge
- coughing
- abscesses in the lymph nodes.
  A number of lymph nodes in the head can develop abscesses, however if abscesses develop in the throat they can make it difficult for the patient to breathe and swallow. This is where the name 'strangles' originates.

Nursing care

Nursing care is predominantly aimed at supporting the patient and treating them holistically rather than just concentrating on the body system affected by the disease.

- The patient may have an increased temperature but they will often feel cold. Rugs, bandages and a deep bed should be used to keep them warm and comfortable.
- A depressed patient will benefit from lots of TLC so grooming them at least twice daily is very important.
- Boredom can be addressed by providing licks and stable toys to keep the patient entertained.
- The one foodstuff horses will always take an interest in, even if they are poorly, is grass. It is sometimes helpful to pick grass and feed it to the patient from the floor.
- If the patient is suffering from respiratory disease, a dust free environment must be provided. Bedding should be dust extracted and the stable well ventilated.
  Soaked hay or haylage should be fed to reduce exposure to dust, moulds or fungus. All food should be fed from the floor to encourage drainage of mucus.
- Any hard feed should be soaked to make it easier for the patient to swallow and reduce the chance of choke developing.
- In cases of 'strangles', hot compresses (surgical gloves filled with warm water) can be applied to abscess sites to encourage maturation and bursting.
- Any discharge should be cleaned away as regularly as possible. Vaseline can be applied to prevent the discharge scalding the skin.

In some cases of infectious disease, patients may also require intravenous fluids and assisted feeding. This treatment would normally be administered at a veterinary hospital. It is important to be aware that in infections such as Streptococcus equi. the bacterium can survive in the environment for long periods (up to nine weeks) on wood if temperature and humidity are optimal. This is why barrier precautions and stringent disinfection techniques are essential to ensure the bacteria are contained and eradicated once the patient has recovered. It is very important that the disinfectant used is active against the particular disease-causing agent. If you require any information on barrier nursing or disinfectants please contact your local practice who will be able to advise you on these subjects.

Andrew Illing VetMB MA MRCVS, Chapelfield Veterinary Partnership Ltd

Hospital infections

Hospitals are used for many aspects of veterinary work, not only medicine and surgery but also routine procedures such as vettings or vaccinations. The aim is to provide the best possible environment for those horses attending the hospital; this can often be difficult as both sick and healthy animals may have to share the same clinical areas.

Veterinary surgeon	Andrew Illing
XLVets Equine practice	Chapelfield Veterinary Partnership Ltd

Figure 1. Ringworm is a common fungal skin infection

Several strategies are employed by hospitals to prevent infected animals from transmitting infections to other animals within the hospital. But first we must divide and discuss the two main forms in which an animal can contract an infection within a hospital:

1. contagious diseases
2. opportunist infections.

Contagious diseases

Organisms such as salmonella, equine influenza, equine herpesvirus, equine infectious anaemia, clostridial enteritis, rotavirus and those causing strangles and MRSA can be very severe for patients, but also can cause a hospital to close because of the risk of spread. Once diagnosed, there is often a long and complicated procedure to eliminate the organism before the hospital can return to normal function.

As hospitals are continually admitting horses from a large geographical area and different horse populations, there is a constant challenge regarding biosecurity within the hospital.

It is important to maintain:

- proper hygiene
- patient segregation or isolation
- staff separation
- monitoring of the animals and environment
- careful handling of high risk patients.

In some instances a horse may need moving from the hospital to an isolation unit in order to protect other patients, especially in cases of airborne or faecally transmitted infections. Routine monitoring of the above and other infectious organisms is not always straightforward due to the complexities of testing and the time taken to obtain results.

Specific bacterial cultures can be taken for salmonella and other bacteria, with culture and sensitivity tests to find out which antibiotics are useful. Viruses require more specific testing such as PCR (looking for fragments of DNA) or viral isolation.

Some hospitals will take samples before admitting patients but there is always a fine balance between patient health and hospital biosecurity. Skin infections, such as mange, lice and ringworm (Figure 1) can live in housing and are usually picked up on general examination of the patient and examination of samples under a microscope. Patient monitoring before, during and after admission can help to reduce the chances of problems developing.

There is also an increased risk from any patients that have travelled abroad or mares that have been inseminated with semen from abroad. Handling these patients must be done with care as several of these infections can be zoonotic and so transmissible to staff and owners as well.

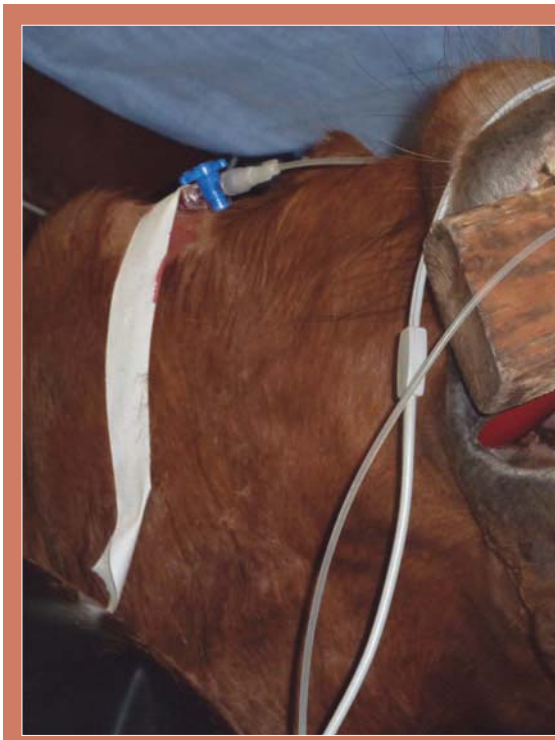


Figure 2. Placement of an endotracheal tube is a potential source of infection

Contamination protection

Isolation facilities

Ideally a hospital will have a separate isolation facility but if not barrier-nursing has to be used as a less effective option. Patients with infections such as salmonella produce billions of bacteria that rapidly contaminate the environment and do not readily disappear. The isolation and restriction of these patients should be done as soon as possible, but even then it may be too late to prevent a serious breakdown of infection.

Hand washing is essential; gloves and gowns are ideal, but alcohol sanitizers can be used as a lesser option. Waterproof footwear and disinfectant foot dips should be used to minimise shoes spreading infection around the hospital. The isolation unit should be treated and cleaned last after other routine patient and room cleaning to reduce spread from dirty to clean rooms. Different staff should be used if possible for the isolation patient, as well as different water and feed buckets and hay nets. No equipment should be shared between patients.

With certain zoonotic infections staff ought to be wearing additional personal protective equipment (PPE): masks, glasses and coveralls. Food and drink precautions must be enforced as there is a potential for staff to suffer from these infections.

Opportunist infections

Many uninfected horses will attend the hospital for treatment or diagnosis of problems. This can all prove stressful and reduce their immunity, making them more susceptible to infection if they are challenged. There are a variety of 'opportunistic' organisms that survive on healthy horses, staff and in the environment that can cause disease if given the right opportunity.

Veterinary surgeons, further bypass the horse's body defences by:

- the placement of intravenous catheters
- operation wound sites
- intubation for anaesthesia (Figure 2)
- urinary catheterisation
- stomach tubing
- injections (in veins,muscles, joints etc).

The main way of controlling these opportunist pathogens is with good hygiene. This starts with hospital protocols to keep hygiene routine.

- Schedules are put in place for thorough cleaning and disinfecting equipment and rooms.
- Correct waste disposal is important to remove contamination.
- Basic hygiene with washing hands can't be emphasised enough. Soap and water or alcohol gels can be useful.
- Proper patient preparation with pre-operative clipping of hair, cleaning and spirit swabbing to reduce exposure to skin bacteria. Hoof coverings to prevent dirt being brought into surgery. Vets and nurses washing/showering and wearing gloves, gowns and masks.
- Equipment and drapes are autoclaved (sterilised) or used as disposables, whilst suture materials and implants are designed to minimise the chances of infection taking hold.
- Positive pressure operating facilities, where clean air forces out potentially dirty air can help to reduce airborne pathogens but is less practical in equine hospitals than small animal hospitals.

Post-operative wound care is nearly as important as the operation. Vets will dress wounds to reduce exposure to environmental organisms but horse behaviour and their anatomy can make it hard to keep bandages and dressings in place.

Antibiotics are used where needed, but there is pressure to reduce their use and emphasis on hygienic operation. There has been an increase in the number of resistant strains of bacteria such as E.coli, salmonella, clostridia and MRSA and as such, 'second line' antibiotics are being held back from use unless absolutely warranted. Where wound, joint, respiratory, gastrointestinal or other infections occur, swabs are taken and sent for culture or PCR to identify the organisms involved.

For animals with shock or septicaemia, it is routine to provide intravenous fluids, antibiotics and anti-inflammatories via an indwelling catheter in the jugular vein. This may also apply to horses that are off their food or not drinking. If intravenous catheters are in place too long they can also act as a source of infection. With some conditions infection can develop several days after treatment by which time the patient may already be discharged from the hospital. With these cases post-operative checks or reporting can reduce the chance of these problems developing.

All equine hospitals strive to reduce the risk of infections and improve the outcomes of all treatments; however as with human hospitals the increasing number of resistant bacterial strains provides a constantly evolving challenge.

Dr Richard Newton BVSc, MSc, PhD, DLSHTM, DipECVPH, FRCVS, Head of Epidemiology and Disease Surveillance, Animal Health Trust

Biosecurity: Simple steps for horse owners and competitors to reduce the spread of contagious disease

Although the UK has seemingly seen more problems with Equine Herpesvirus-1 (EHV-1) infection in recent years, EHV-1 is, and always has been, an ever present threat among horses attending and mixing at equine events.

This is because this common virus has the ability to remain in a hidden form within horses and re-emerge without warning to cause clinical problems. This is a similar phenomenon seen with herpes simplex virus in humans which periodically re-emerge to cause 'cold sores' in some people. As with herpes simplex virus, the re-emergence of EHV-1 is seemingly variable between individuals and may occur in a variety of stressful situations, including travelling and mixing of horses.

The following general advice is designed to help horse owners and competitors reduce the risk (both to their own horses and to other horses) of acquiring and spreading infections through attending equine events. It should be noted that this advice applies not only to EHV-1 but also to other infections that might be encountered through attending any equine event and should be applied irrespective of whether there is heightened risk of EHV-1 infection in the country at the present time.

Actions to take at home before attending an event

- It is good practice to routinely take the rectal temperature of all horses twice daily and record these in a diary. It should then be obvious when an animal 'spikes' an abnormally increased temperature (usually >38.5 degrees Celsius). A horse with a temperature should be promptly isolated away from other animals and a veterinary examination requested.
- Veterinary surgeons may not know the precise cause of the fever when they examine the horse but can take samples at that time. These samples can be tested in a laboratory to pinpoint the infectious agent that is responsible.
- It is an important responsibility not to move horses off premises where infectious disease has been recently diagnosed as it is possible that seemingly healthy animals may be incubating the disease. If these horses are taken to events, they could spread infection to other horses.

Actions to be taken whilst attending an event

- Infections such as EHV-1 spread most easily through direct contact between horses, or through indirect contact arising from sharing of feed/water buckets and tack such as bits/bridles or humans going between horses without applying appropriate hand hygiene measures.
- Unlike human influenza, EHV-1 does not spread readily through the air between horses that are physically separated by more than 5 - 10 metres.
- With these two considerations in mind, the risk of transmission of EHV-1 whilst at an event can be greatly reduced by horse owners and competitors avoiding direct and indirect contact with others.

Actions to be taken after returning home from an event

- It is good practice to routinely isolate horses returning to home premises after attending equine events, where they may have acquired an infection and might act as a source of infection for resident horses.
- Isolation periods of at least two to three weeks are required for horses returning from equine events in order to allow infections acquired at events to show as clinical disease.
- The shorter the isolation period, and the poorer the biosecurity standards applied, the greater the risk that an infectious horse may be reintroduced and that the infection will transfer to resident horses.

- **The main features of isolation of returning competitors should include:**
- Physical separation from resident animals, ideally at distances of greater than 10 -20 metres. In many cases existing arrangements can be adapted so that part of a premises effectively becomes an isolation area;
- Use of separate dedicated staff and equipment for isolated and resident horses to avoid direct transmission between the groups; if this is not possible then isolated horses should always be dealt with after all resident horses to avoid indirect spread;
- Routine collection and recording of rectal temperatures and clinical signs to identify signs of infection as early as possible;
- Requests made for veterinary examinations of any horses in isolation showing clinical signs such as fever, nasal discharge, cough, incoordination etc. Ideally laboratory tests should also be undertaken to determine specific infectious causes;
- Event organisers should be notified if an infectious disease is diagnosed in horses returning from an event as this will help heighten awareness and in some circumstances may help prevent onward transmission from other infected premises.

Actions to be considered by event organisers

- Stabling at events should be cleaned and disinfected between groups of horses, including feed mangers and water drinkers. Fresh and un-used bedding should be provided for new occupants. It is not good practice to have stables occupied by multiple horses without removing bedding and undertaking cleaning and disinfection as the stables can harbour infectious agents and encourage indirect spread of disease from horse to horse.
- Communal water troughs should be avoided as these can act as a common source of infection for multiple horses simultaneously following contamination by an infected horse.
- Open access between stables that allows direct horse to horse contact should be avoided.
- Consider the use of 'health certification' by veterinary surgeons such that horses attending events are 'certified' as coming from premises with either no known recent infectious diseases and/or resident animals without clinical signs that might be due to infectious diseases.
- Provision of facilities and personnel to allow simple pre-event entry health inspections to be conducted, with groups of animals showing any clinical signs of disease at the pre-event entry inspection being prevented from entering the event. Cursory inspection only of animals after entry into event stabling is not ideal and should wherever possible be avoided and replaced with pre-event entry inspection.

If your horse is infected or has been exposed, please act responsibly and avoid moving the animal until it has been given the all clear by your vet.

Jacqui Paton BVSc CertEP MRCVS, Scarsdale Veterinary Group

Preventing antibiotic resistance

Antibiotic resistance is one of the key threats to human and animal health. With this in mind, the British Equine Veterinary Association (BEVA) has developed the Protect ME antimicrobial initiative to promote the responsible use of antibiotics by equine vets.

Why do we need to worry about antibiotic resistance?

- Every time an antibiotic is used there is the potential for the bacteria to become resistant to that drug.
- Every time an antibiotic is used that is not essential, the risk of resistance outweighs any potential benefit of the drug.
- It is vital that antibiotics are used very carefully to ensure that they are available to help our horses for as long as possible.

What does resistance mean?

Once bacteria become resistant to an antibiotic, they will no longer be controlled by that drug and all the drugs in that group will be ineffective against bacteria. Those bacteria can then pass their resistance to other bacteria in the same horse, other animals or people.

Why do we need to control antibiotic usage?

There are no new types of antibiotics being developed to replace the existing drugs, only slow improvement of the existing ones. Therefore it is essential that we try to use these drugs responsibly. If vets do not self-regulate their antibiotic usage then legislation may be introduced which would limit the antibiotics we have available for horses. This would mean that our ability to treat severe infections in horses would be extremely limited.

When can we avoid antibiotics altogether?

There are many situations when antibiotics are not helpful, your vet will guide you as to when they may not be necessary. Examples of when antibiotics will not be helpful include viral infections, allergies, uncomplicated foot abscesses and many causes of diarrhoea. If they are not required, you should not expect your veterinary surgeon to dispense them. They are acting in the best interests of your horse to ensure that these drugs work when they are needed.

How do we decide which antibiotics to use?

BEVA's responsible antibiotic use guidelines have identified antibiotics categorised as critically important and pledged to PROTECT them. They are not necessarily better or more effective than other antibiotics, however these antibiotics are relied on for the treatment of difficult infections in human and equine disease. It is very important that we do not over-use these drugs in order to prevent resistance to them increasing.

Under the BEVA ProtectME scheme we use good recognised antibiotics for first line treatment. The use of protected antibiotics is reserved for situations where laboratory tests show it is the only suitable drug, first line antibiotics have failed to treat an infection or for very specific situations. We record the use of all protected antibiotics to monitor their use.

What can you do to help?

Horses rarely carry diseases that affect humans and similarly humans rarely infect horses. However there are some important exceptions, including MRSA and Salmonella which can pass between horses, or from one horse, via you, to another horse. Thorough hand washing is important to reduce contamination and prevent the development of diseases in your horse or yourself.

If your horse has been prescribed antibiotics, ensure that he receives the full amount for the full length of time. Giving a reduced dose or not giving a whole course of antibiotics can increase the likelihood of antibiotic resistance developing.

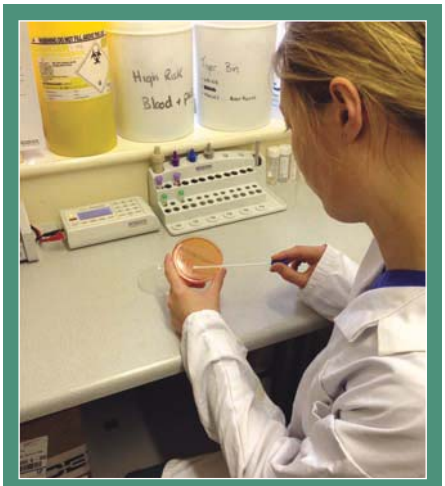
The future

Many practices have now implemented the BEVA ProtectME guidelines and by working together we should be able to help safeguard antibiotics for use in equine disease and reduce the development of antibiotic resistance.

ScarsdaleVets Equine

Veterinary surgeon Jacqui Paton

XLVets Equine practice Scarsdale Veterinary Group



Culture and sensitivity testing guides appropriate antibiotic use

VET VIEWPOINT...

WE ASK THE OPINIONS OF OUR VETS ON THE TOPIC OF ANTIBIOTIC RESISTANCE

Should we be worried about antibiotic resistance?

Jane King BVetMed MRCVS
Westmorland Veterinary Group

In my opinion antimicrobial resistance is a problem which should be taken very seriously by the veterinary industry and horse owners alike.

We have come to rely on antimicrobials or antibiotics in our day to day work, we trust them to be effective in treating disease, managing infection in wounds and preventing infection during surgery.

If antibiotics no longer worked it would have a big impact on our ability to treat a variety of conditions in horses. More serious would be the effect on human health and food supply as disease control and production in farm animals would be affected.

All the above combined with the fact that there are fewer pharmaceutical companies developing new antimicrobials means we should encourage everybody to think twice before reaching for the penicillin. We have been fortunate to have these veterinary medicines available to treat our patients for the last 50 or 60 years, they may not be available for the vets of tomorrow.

Chris Lehrbach BVMS MVM Cert ES(Orth) MRCVS
Chapelfield Veterinary Partnership Ltd

Imagine a world without antibiotics. From an equine veterinary perspective, forget colic surgery and all the recent advances in limb fracture repair. Wire lacerations and kick wounds, which have become eminently more treatable, would once again become devastating injuries.

Even run of the mill injuries and infections, now considered more of an inconvenience would once again become disfiguring, career ending and even life threatening conditions.

Whilst antibiotics are only one tool in the medical arsenal against bacterial infections, almost everyone alive today grew up in a world with antibiotics, making it difficult to appreciate their complete absence.

Antibiotics are not a panacea for all bacterial problems and their role continues to evolve as new drugs and novel methods of administration are developed. In the equine veterinary world we have relatively few antibiotics available. Veterinary surgeons and owners alike should recognise their responsibilities and avoid the inappropriate use of antibiotics.

So, the simple answer is yes. But it is not too late if everyone acts. Speak to your vet about this important issue.

Katie Gray MRCVS Capontree Veterinary Centre

Antibiotic resistance is frequently in the media due to increasing incidence in human medicine. As vets we have to be responsible in our use of antibiotics as our misuse can ultimately result in global human consequences. It is important that we choose the right antibiotic for the right case.

As owners it is important to give the whole course of antibiotics prescribed, even if the problem has resolved and your horse seems better. Giving a shorter course can create antibiotic resistance as it is possible not all the bacteria have been killed. Horses can be difficult to medicate either in feed or by injection so if you are having problems let your vet know. Don't just wait and see if the problem gets better without the full course. We will often have alternative treatment options to ensure a full course is given.

pony pages

Welcome...

TO THE SPRING 2014
XLVETS EQUINE PONY PAGE

Top Tips

Managing seasonal allergies

from Kerrie Winstanley BVetMed MRCVS, Castle Veterinary Practice Ltd

- An allergy to something means that a pony's immune system overreacts to normally harmless substances in their environment, for example to hay or dust mites.
- Ponies can have an allergic reaction, which can be painful and make them very poorly, requiring a vet to give them treatment. It is important to manage allergies to prevent allergic reactions from happening.
- Ponies are commonly allergic to hay, straw, dust mites in stables and barns and saliva from fly bites.
- Ponies will often cough and have a snotty nose if they are allergic to hay; the hay being dry and dusty often worsens it. An easy solution to this is to soak the hay in water for at least 30 minutes or to switch your pony to haylage gradually; this reduces the number of dust particles that your pony is exposed to. Turning your horse out as much as possible will help this allergy.
- Some ponies may cough or be irritated by straw bedding, simply switching them to shavings, shredded paper or rubber matting can help them a great deal. This tends to be more of a problem in the winter when horses are stabled more frequently.
- In the summer, some ponies are particularly allergic to fly bites and can be very itchy or come out in lumps and bumps. Using a good fly repellent is important as well as using a fly rug for protection. Ensuring your horse is kept away from stagnant water and muck heaps can reduce their exposure to flies too!
- Sometimes ponies can be allergic to something in their field, like a pollen, keeping these ponies in their stable helps protect them against allergic reactions.

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