Feeding can act as a catalyst for conflict between animals. When horses are kept in a group, competition for food and the herd social hierarchy conspire to make feeding time a potentially dangerous affair.

Which is the safest way to feed groups of yearlings turned out at pasture?

A study at Pennsylvania State University has been investigating how horses responded to three different feeding systems.

A group of yearlings (four fillies and four geldings) had been kept together at pasture since weaning. They were normally fed in feeders constructed from a pair of large tractor tyres with a board between them. This gave a feeding area that could accommodate more than one horse at a time, with the food raised above the ground.

Dr Susan Motch and her colleagues compared how the horses behaved when fed using this system, and when they were fed in individual tubs or in a manger with individual feeding stations.

The horses were fed twice daily. The scientists observed them from the moment food was placed in the feeder until it had been eaten up. Each different feeding system was used for 10 days, then changed, until each system had been used twice.

Horses often turned over the individual feeders, spilling the food on the ground. This often prompted them to move to another feeder.

When fed with the tyre system, the horses spent longer eating and showed less antagonist behaviour towards their fellows. Horses were most likely to show antagonistic behaviour when feeding from the manger system.
A new formula will make it easier to estimate a foal’s weight, according to researchers in Chile.

It is often important to know how much a foal weighs. Records of body weight can be used to monitor growth rate and ensure accurate dosing of anthelmintics and other medications.

Obviously a weighbridge or scale that measures the weight accurately is the “gold standard”. But often scales are not available. Visual estimates are often inaccurate. Many weigh tapes are not intended for use in foals under six months of age.

Various indirect methods of estimating the weight have been described. These usually involve a calculation based on measurements of parts of the body. While such systems might be practical in adult horses, they can present difficulties in uncooperative foals.

Researchers at the University of Concepcion, in Chile have devised a formula that they claim provides a simple way of estimating a foal’s weight. A full report of their research was published in the Veterinary Record.

The method requires only one measurement to be taken. The distance around the girth is measured just behind the elbow and 2.54 cm behind the highest point of the withers. The measurement is taken just after the foal has breathed out.

Dr Rodriguez and colleagues took measured 80 Thoroughbred foals weighing between 50 and 250kg. Analysis of the data produced a formula that could be used to predict the weigh from the heart girth.

Estimated weight (kg) = $G^3 \times 90$

(where $G$ = heart girth measurement in metres.)

A more complex formula ($wt = G^{2.9945} \times 0.000088$, where $G$ is the girth measurement in centimetres) was found to give a more accurate result, but the scientists suggest that this might prove too complicated for use on the farm.

They also found that their method was not quite as accurate as one previously described by Staniar and others. However, it does have the advantage of simplicity. In addition to heart girth measurement, Staniar’s formula also includes the length from point of shoulder to point of buttock, length of the left foreleg and circumference of the knee.

The scientists recommend their new formula for estimating foal’s weights on farms. Not only does it give acceptable results from a single measurement, it is relatively simple and can easily be remembered.

For more details see:

Research from France may change the way we manage newborn foals. Scientists have found that helping the foal to find the teat can influence the foal’s behaviour as it grows up.

The importance of making sure newborn foals drink an adequate amount of colostrum is well known. A normal foal will usually suck within 2 hours of birth. Many stud managers advocate helping the foal to the teat to ensure that it gets off to a good start in life.

But scientists at the University of Rennes suggest that the practice may have unexpected consequences on the foal’s behaviour. Dr Martine Hausberger and others looked at whether encouraging the foals to suck influenced their behaviour later in life.

For a start, the researchers studied the behaviour of 3-month old foals on a farm where foals were routinely taken to the teat two hours after birth. Now, it may be that by waiting that long before helping the foals, allowed the stronger foals to start sucking on their own. Perhaps only the weaker foals were helped.

So to avoid this influencing the findings, they carried out a second study in which they led the foals to the mares after half an hour. The foals that were helped were chosen at random. The other foals were left to find the teat themselves.

Foals that were brought to their dams to suck for the first time behaved differently when observed at 1 - 3 months of age. They tended to stay closer to their mothers and spend less time playing with their fellows.

In contrast, foals that had been allowed to suck spontaneously seemed more independent. They were more playful and were more likely to leave their dams to play and explore the environment.

Why does that matter? The bonding process between mother and offspring has an ongoing influence on the behaviour of the offspring. In previous work, Dr Hausberger and others showed that foals that spend more time playing away from their dams tend to react better to novel objects and new experiences when they are older.

Other than the assistance given at first suckling, both groups were treated the same both at birth and afterwards. All other management factors were the same. So the only explanation for the different behaviour was the presence or absence of help to start suckling. Why should this be? Dr Hausberger observes that mares tended to be restless while the foal was being handled. Perhaps this produced an emotional response in the foals.

The scientists conclude that first suckling is a crucial part of forming the bond between mare and foal. They suggest that it may be best to let the foal “set the agenda”. Foaling attendants should give assistance according to the individual foal’s need rather than adhere to a rigid routine.

For more details see:
First suckling: A crucial event for mother - young attachment? An experimental study in horses (Equus caballus).
M Hausberger, S Henry, C Larose, MA Richard-Yris.
J Comp Psychol (2007) 121, 109 - 112

Equine Science Update e-news is now available.
Receive monthly news by e-mail
See: www.equinescienceupdate.co.uk for details.
How do horses see colour? What does the world look like to them?

Light is detected by specialised receptors in the retina at the back of the eye. The receptors responsible for colour vision are called cones.

Humans with normal colour vision possess three types of cones, each of which contains pigment that responds to a different range of colours. Because they have three separate populations of cones, roughly sensitive to red, green and blue light, normal people are termed trichromats (literally three colours).

Any change in the amount of pigment in the cones, or the wavelength of light to which it responds, can lead to deficiencies in colour vision.

In contrast, most nonhuman mammals are dichromats and have only two classes of cones.

Dr Evelyn Hanggi and Jerry Ingersoll of the Equine Research Foundation, Aptos, California, with the help of Terrace L Waggoner of the Eye Clinic at the Naval Hospital at Pensacola, Florida, performed a study to investigate what colours horses could distinguish. Waggoner had previously designed the Color Vision Testing Made Easy Test for children and adults and modified it for use in horses.

Firstly Hanggi and Ingersoll trained the horses to chose between two cards, one of which had a circle marked on it. If the horse chose the card bearing the circle, by touching it with its nose, it received a reward. For this initial training, Hanggi used a circle composed of orange dots on a background of blue-green dots. This combination of colours was chosen because it is visible to all humans, even if they are colour-deficient.

Once the horses had learned to choose the card bearing a circle, the next stage was to test different colour combinations to see if the horses could differentiate them. The choice of colours was determined by the colours that colour-blind humans have difficulty distinguishing. For example, people that are red-deficient (protanopes) can not see a red-purple dotted circle on a dotted grey background.

If a horse could not distinguish between the colours, it would be expected to choose the correct card 50% of the time purely by chance. So, to be sure that the horses’ response was not down to chance the researchers set a target of 80% correct tests before they would conclude that the horse could differentiate between the colours.

None of the four horses in the study was able to distinguish a dotted brown circle on a dotted green background. Neither could they see the circle when it was made of red-purple or blue-purple dots on a dotted grey background. These findings were typical of people with red or green colour deficiencies.

However, the horses could identify a circle of yellow-green dots on a grey dotted background. This shows that they were not blue colour deficient.

“So, it appears that, compared with humans, horses are red-green colour deficient but not blue colour deficient. It is most likely that horses see the world in a similar way to humans with red-green colour deficiencies. Red, orange, yellow and green probably all appear the same.

“Nonetheless,” Dr Hanggi points out, “horses do just fine with limited colour vision and probably use other visual cues (brightness, hue variation, depth, etc.) to function with ease in their environment.”

For more details see:

Color vision in Horses (Equus caballus): Deficiencies identified using a pseudoisochromatic plate test.
EB Hanggi, JF Ingersoll, TL Waggoner.
J Comp Psychol (2007) 121(1), 65 - 72

For more information of the work of the Equine Research Foundation and their learning and riding vacations and internships see:
www.equineresearch.org

For more about colour blindness in people see:
http://colorvisiontesting.com
Effect of floating teeth on performance.

A wide variety of dental abnormalities have been described in the horse. It is commonly thought that they interfere with chewing and grinding of food, which may be swallowed without being chewed adequately. It is suggested that this may limit the nutrients that can be released from the food, and may lead to weight loss and digestive problems such as colic and choke.

Dental problems are also blamed for poor performance. Horses with painful mouths may concentrate on the pain rather than the bit cues. Dental abnormalities such as sharp points may ulcerate the cheeks or tongue and may lead to evasion of the bit.

Interest in equine dentistry has undergone a revival in the past decade. Despite that, there is actually little scientific evidence that routine floating is beneficial.

One clinician who has been at the forefront of research into the benefit of routine dental care is Dr James Carmalt. In trials on pregnant mares, he demonstrated that floating increased the rostro-caudal movement of the jaw. However, it had no effect on improving weight gain, food digestibility or fecal particle size.

Perhaps of more interest to horse riders is the effect of floating on performance. In work carried out in Canada, Dr Carmalt and colleagues assessed the benefit of floating on performance in horses undertaking standard dressage tests.

The study compared eleven horses that had not had their teeth floated for at least a year with five horses that had received six-monthly dental care.

The horses performed one of two standard dressage tests approved by the Canadian national equine federation (Equine Canada). A single experienced rider rode all the horses for each test, which was marked by two dressage judges.

After each horse had completed the first test, it was sedated and Dr Carmalt assessed the state of the teeth. Common abnormalities were sharp points on outer edges of upper cheek teeth and inner edges of lower cheek teeth. Many horses also had small hooks on the first upper cheek teeth and ramps on the last lower cheek teeth.

The eleven horses then had their teeth floated using a power grinder. The five horses that had received regular dental care were sedated and examined, but did not have their teeth floated.

Two days later the horses performed the second of the two dressage tests. Neither the rider, nor the judges, knew which horses had had their teeth floated.

Analysis of the dressage scores showed that floating the teeth had no effect on performance.

The horses were also given a score according to the rider’s impression of how they went. Interestingly, although the rider did not know which horses had been treated, she correctly identified five treated and two untreated horses. She was unable to decide whether the other horses had been treated or not.

This was only a small study involving 16 horses of different abilities. Dr Carmalt suggests that further studies of horses at different levels and types of competition are needed with to investigate the value of floating teeth in performance horses.

For more details see:
The effect of occlusal equilibration on sport horse performance.
JL Carmalt, KP Carmalt, SM Barber
Effect of fasting on gut sounds.

Listening to the sounds of the gastrointestinal tract is a valuable diagnostic aid in horses with colic. It is used by clinicians to assess gut motility.

Two types of sound can be heard. Localised contractions of the bowel produce sounds associated with mixing of the gut contents. These are relatively quiet sounds, lasting 2-5 seconds, which occur 2-5 times a minute. More prolonged sounds occur less frequently. These represent propulsive movements of the gut as the contents are moved along.

For descriptive purpose the horse’s belly can be divided into four areas, called quadrants. As different parts of the bowel lie underneath each quadrant the sounds heard at each may differ. The best example is the rushing noise of fluid passing from the small intestine through the ileocaecal valve, into the caecum. This is loudest in the right upper quadrant.

Increased movement can be heard in some forms of colic. Indeed, the prospects of recovery are generally better if there is an increase in gut sounds. In spasmodic colic the sounds are often continuous and increased in intensity.

Most other causes of colic result in reduced gut sounds.

Given the importance of gut sounds in assessing gut function, there has been surprisingly little research into the normal variations that occur.

A study carried out at the University of Saskatchewan in Canada looked at the effect of fasting on gastrointestinal sounds. Dr Jonathon M Naylor (now based at the Ross University School of Veterinary Medicine on St Kitts, in the West Indies) and his colleagues have published a full report of the research in the Journal of Veterinary Internal Medicine.

Using an electronic stethoscope, they recorded samples of gut sounds from each quadrant and the right mid flank, each lasting one minute. Sounds were recorded twice at twelve-hour intervals. The horses were then fasted for 24 or 48 hours. Sound recordings continued at twelve-hour intervals. A further two recordings were made once the horses were allowed access to hay again.

To get an objective assessment they measured the sound intensities. They found a wide variation in intensity of gut sounds between different horses. This makes it difficult to assess the significance of gastrointestinal sounds - especially on a single examination. Serial examinations showed a marked reduction in sound intensity in fasted horses.

The left upper quadrant was the quietest, probably because it lies over the small colon. The right lower quadrant, which lies over the tip of the caecum was least affected by fasting. This may be because it retained some food, which continued to be digested during the period of fasting. There was a rapid increase in sounds during the 12 hours after horses started eating again.

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To see if different examiners perceived the sounds differently the researchers had two clinicians assess the recordings. Neither knew whether the horse was being fed or fasted at the time the recordings were made.

Interestingly, there appeared to be a wide variation in the number of sounds identified by the two examiners. There was also little agreement between their findings and the objective measurement of sounds. This was despite them having been given example recordings to listen to before assessing the experimental recordings.

It’s a perennial problem. What do you do with the horse manure? In the past, townsfolk would follow the cart in hope of collecting some fertiliser for the garden or allotment. Nowadays it is more likely to be considered a health hazard.

For horses kept on small areas, collecting the droppings helps control the spread of parasitic worms. It also increases the area available for grazing by reducing the amount of contaminated pasture. But, it’s all very well collecting the faeces from the pasture - what do you do with it afterwards?

And then there is the problem of disposing of faeces and contaminated bedding from the stable.

One possibility suggested by recent research is to ferment the manure to produce gas, which could be used for heating. Sigrid Kusch and fellow workers at the University of Hohenheim in Germany have been investigating the methane-producing potential of horse manure.

Their laboratory study employed small-scale reactors, each with a capacity of about 50 litres. Horse dung and straw was used as the substrate for a batch digestion process. The leachate, the liquid that drained out of the substrate, was pumped back to the top of the reactor twice daily. The temperature in the reactor was maintained at about 35°C.

Initially, the scientists added a solid inoculum (partly digested faeces) to the reactor to start the digestion process. However they found that if they flooded the reactor with liquid collected from an earlier experiment, rather than simply percolating the liquid that leached out of the manure, they did not need to add the solid inoculum.

Flooding the solid matter with liquid led to slightly higher gas production over the six-week cycle than when the water was allowed to percolate through the dung and straw mixture.

If fact, they could even get similar results by using drinking water, without additional bacteria, to flood the reactor, although gas production was lower for the first 10 days. Methane was produced more quickly if the faeces and straw mixture was chopped into pieces about 4cm long before starting the digestion process.

The scientists estimate that if similar techniques were used on a larger scale the expected production would exceed 20m³ biogas / 20m³ of manure.

Who knows - maybe in the future we will come to look on horse manure as a valuable resource?

For more details see:

Modern DNA technology is set to revolutionise the diagnosis of equine gastrointestinal parasites.

A Danish Ph.D. student from the University of Copenhagen has developed a novel diagnostic method for detection of the horse bloodworm, *Strongylus vulgaris*.

The bloodworm gets its name from its extensive migrations in the blood vessels of the horse. After being eaten by the horse on pasture, larvae live in the blood stream for about four months and cause severe reactions, leading to "thrombo-embolic colic", a disease syndrome characterized by severe manifestations of pain. The condition has a poor prognosis, and often death is the outcome.

Bloodworm eggs have a similar appearance to the majority of parasite eggs in equine faeces. A conclusive diagnosis of bloodworm infection can only be reached after two weeks of faecal culture ("coproculture") and subsequent microscopic identification of hatched larvae. This is clearly time-consuming and requires considerable technical skills from the microscopist identifying the bloodworm larvae.

"Nowadays, we recommend minimal deworming to prevent further development of anthelmintic resistance as much as possible. At many horse establishments in Denmark, people deworm twice yearly or less, and the choice of treatment is based on faecal examination", explains Dr. Martin Krarup Nielsen, DVM from University of Copenhagen. "The coproculture method is labour-intensive and not fully reliable, and as a consequence, some horses are being under-treated, while others are over-treated".

Dr. Nielsen spent a part of his study at University of Georgia, USA and used the real-time polymerase chain reaction (PCR) technique to develop his assay designed for detecting bloodworm DNA in faecal samples. The assay can detect down to a single bloodworm egg among a thousand parasite eggs in a sample, and it can quantify the number of bloodworm eggs. The instrumentation can analyse 96 samples at a time, and the whole procedure can be completed within a working day.

"We now have a powerful and reliable diagnostic tool for monitoring the bloodworm of horses, which will be of benefit for horses world-wide", says Dr. Nielsen.

He will be presenting his work at international conferences in Washington DC, USA and Ghent, Belgium this summer. A full report of the research has been accepted for publication in the International Journal for Parasitology.

For more details see:

Foetal gender determines Zebra weaning time.

What factors influence the age at which foals are weaned?

Many lactating mares are also pregnant. So it is often necessary to balance the needs of the sucking foal with those of its future sibling and the mare herself. It is important to allow the mare enough time after weaning to devote her resources to her next foal.

The actual time of weaning is often laid down by tradition. Current equine stud practice is to wean foals at about 5 -6 months of age. The timing is often determined by the need to prepare foals for sale.

Sometimes early weaning may be required. Foals with developmental orthopaedic disease may have to be weaned early to reduce their food intake.

But what would happen if mares were left to decide for themselves when to wean the foal? In feral horses, weaning occurs shortly before the mare gives birth to the next foal, when the foal is up to a year old. If the mare is barren the foal may stay on her for up to two years.

According to studies in captive zebra mares in the Czech Republic, one factor that can influence the time of weaning is the sex of any unborn foal the mare is carrying. Dr Jan Pluhácek of the Research Institute of Animal Science at Praha-Uhrineves and his colleagues studied three herds of captive plains zebra at the Dvur Králové Zoo.

The gestation period of the plains zebra is longer than that of the domestic horse, ranging from 360 - 385 days. As in mares a “foaling heat” occurs after about a week after foaling. Most zebra mares conceive when they are nursing a foal - so mares often provide for two offspring at the same time.

The researchers looked at various factors - such as the sex of the weaned foal; the parents’ age; size of herd; and number of other foals in the herd.

They found that pregnant mares weaned their foals at least 50 days earlier than did non-pregnant mares.

Mares carrying a male foetus weaned their foal earlier than mares carrying a female foetus. The sex of the foetus was the most significant factor affecting time of weaning of the current foal.

Dr Pluhácek points out that this is the first time the sex of the foetus has been shown to influence weaning age in hoofed mammals.

For more details see:

Sex of the foetus determines the time of weaning of the previous offspring of captive plains zebra (Equus burchelli)

Jan Pluhácek, Ludek Bartos, Miroslava Doležalova, Jitka Bartosova-Vichova

Chorioptic mange is a common skin problem in horses. It is more often seen in draft breeds, especially those with hairy legs (“feather”). The lower legs are the most common sites of infestation, but the base of the tail and body can also be affected.

The chorioptic mites live on the skin surface. Their mouthparts are adapted for chewing and they feed on skin debris. Although they do not burrow into the skin, they can cause considerable irritation.

Affected horses rub, stamp, and bite their legs and kick, especially at night. Mild cases may show patchy hair loss and the skin may become thickened and scaly. In severe cases the skin may become raw, with secondary bacterial infection. The disease tends to be seen more commonly in the winter - possibly as a result of animals being housed close to each other.

Interestingly, some horses can be infected without showing signs, and they may act as a source of reinfection for treated animals. The mites are also able to survive in the environment, probably for several weeks. So, as well as treating affected animals, it is important to replace the bedding and treat in-contact horses to get the problem under control.

In many countries, including the UK, no products are licensed to treat the condition. Several drugs have been used “off-label” to treat affected animals including fipronil and doramectin.

Fipronil is widely used to treat fleas and lice in small animals. It accumulates in the sebaceous glands of the hair follicles from where it is released over a several weeks. It is marketed, for small animal use, both as a spray and as a topical (“spot-on”) preparation. Doramectin is used against internal and external parasites in cattle and sheep. It is stored in body fat and released slowly to give prolonged activity. A recent study considered the use of these two drugs for treating chorioptic mange in horses.

Mr David Rendle and colleagues at the Glasgow vet school assessed the response to treatment of seventeen cases of chorioptic mange in horses. They treated eight cases with doramectin (0.3 mg/kg, two doses by subcutaneous injection 14 days apart) and nine others with fipronil (0.25%, sprayed onto the lower legs.)

After two weeks, four of the doramectin-treated horses and eight of those treated with fipronil had improved. By four weeks none of the horses showed any behavioural signs of skin irritation. “I am unconvinced that one treatment is better than the other” Mr Rendle adds. “I find both equally effective.”

No adverse reactions were noted in any animals. Some of the horses with heavily feathered legs were treated without being clipped. Despite that the treatments appeared to be effective. However, because of the small number if horses involved, that does not prove that clipping is unnecessary.

This work should provide encouragement for vets in practice when faced with this irritating condition.

For more information see:

Comparative study of doramectin and fipronil in the treatment of equine chorioptic mange.
DI Rendle, J Cottle, S Love, KJ Hughes.
**Blood tests for gastric ulcers?**

Gastric ulcers in foals seem to have become more common in recent years. It is hard to say how common they really are because of the difficulty in confirming the diagnosis.

They are often seen in foals following a stressful situation - such as transportation and treatment for other diseases. Nonsteroidal anti-inflammatory drugs (NSAIDs) such as phenyl-butazone, can precipitate the disease. But by no means is the condition seen only in foals that have been treated with NSAIDs.

Affected foals typically have diarrhoea, grind their teeth and salivate excessively. They may go off their food and lie on their backs.

Severe cases may die if the ulcer perforates, but most cases are not as dramatic. If the ulceration has spread to the duodenum, scarring may occur as it heals. This can cause on-going problems, as the flow of food through the bowel is restricted.

Many cases of gastric ulceration in foals do not show specific signs. So the challenge is, how do you confirm that a foal has gastric ulcers?

The best way is to examine the stomach lining and duodenum using a flexible endoscope. However, this is technically difficult, and if possible foals over 3 weeks of age should be starved of solid food for 12 hours and milk for 4 hours (milk) before examination.

Researchers in Japan may have found a simpler way of identifying animals with gastric ulcers. Work carried out in the Rakuno Gakuen University School of Veterinary Medicine suggests that it may be possible to use blood samples to identify foals with gastric ulcers.

Dr S Taharaguchi and others isolated a specific protein in the blood of foals with gastric ulcers.

They found a 55kDa protein, which they identified as an isoform of alpha1-antitrypsin. It was present in 44 of 47 samples from foals with ulcers confirmed by endoscopy. In contrast, they found it in only three of 22 samples from healthy foals.

Ulcers occur when the acids and enzymes that are present in the stomach start to attack the stomach itself. The scientists suggest that this specific form of alpha 1-antitrypsin may be produced as a protective response to damage by the proteolytic enzymes, or it may be the result of intact alpha1-antitrypsin being broken down by the ulcer.

They suggest that future studies need to look how the protein is produced and at what stage of the disease it appears. If the serum concentration of the 55kDa alpha1-antitrypsin proves to be correlated with the severity of the ulcer, it may even be possible in the future to assess the severity of gastric ulcers by analysing the serum samples.

For more details see:

Detection of an isoform of alpha1-antitrypsin in serum samples from foals with gastric ulcers.
Vet Rec (2007) 338 - 342

**Treating back pain.**

Back pain is commonly blamed for loss of performance in horses. The complex structure of the back makes it a challenge to identify the exact nature of the problem.

"We do not think back problems are always secondary to problems elsewhere," points out Dr Virginie Coudry of the French National Veterinary School at Alfort. "We think there are lots of primary lesions of the back that can cause pain." As well as damage to the vertebrae themselves, the muscles and ligaments may be involved.

Identifying the site of pain can be difficult. But advances have been made in recent years. Techniques such as nuclear scintigraphy (bone scan), radiography, ultrasonography may pinpoint the problem.

Arthritis of the joints between the vertebrae is one possibility. As well as being joined together by the intervertebral disc, the vertebral bodies each have two pairs of articular processes at the front and back. These form synovial joints (articular process - synovial intervertebral joint : AP-SIVJ) with the corresponding processes of the neighbouring vertebra. They provide stability yet allow some movement between adjacent vertebrae.

Degenerative joint disease (arthritis) of these joints is common in both young and older horses - and is often found in horses with back pain. However, it is not present in all horses with back pain, nor do affected horses always show back pain.
Injecting anti-inflammatory medication, such as corticosteroids, into the area may ease the discomfort.

A possible new treatment for back pain associated with bone lesions has been suggested by work at the Centre d’Imagerie et de Recherche sur les Affections Locomotrices Equines, at the French National Veterinary School of Alfort. Dr Coudry and her colleagues found that tiludronate, a drug that inhibits bone resorption, offers an effective treatment for these cases.

Tiludronate is licensed in some countries for the treatment of bone spavin and navicular disease. It blocks the activity of the osteoclasts, the cells that resorb bone as part of the bone remodelling process. Osteoclast activity is thought to be painful - so blocking them should reduce the pain.

Twenty-nine horses completed the study. All had arthritic changes at the AP-SIVJ - mostly in the lumbar region. Many also had abnormalities of the spinous processes.

Fifteen horses were treated with tiludronate (1mg/kg) given as a single intravenous infusion. The rest received a placebo, which looked identical but was inactive. The investigators did not know which horses had received tiludronate or the placebo until after the final assessment.

Rather than assess back pain during a static examination by manipulating the back, the researchers chose to assess it under more natural conditions, as the horses were moving. They observed the horses walking, trotting and cantering. Each horse was then given a score according to flexibility of the back.

Horses treated with tiludronate were significantly better 60 days after treatment than before. They also moved significantly better than did horses treated with the placebo.

Dr Coudry suggests that tiludronate offers an effective treatment for horses with back pain associated with bone damage.

For more details see:

Efficacy of tiludronate in the treatment of horses with signs of pain associated with osteoarthritic lesions of the thoracolumbar vertebral column.
V Coudry, D Thibaud, B Riccio, F Audigié, David Didierlaurent, Jean-Marie Denoix.