What effect does age have on the horse’s ability to respond to vaccination?

As with other body systems, the immune system undergoes age-related changes (known as "immunosenescence"). This may make the animal more prone to infections and autoimmune and neoplastic diseases.

A research team from the Atlantic Veterinary College, Prince Edward Island, Canada conducted a study to investigate the specific systemic antibody response in horses by looking at how they responded to vaccination. They compared the response of young adult horses (aged 4 - 12 years) with aged horses (20 years or older).

A full report of the work has been published in the Journal of Comparative Pathology (initially published in the Journal of Veterinary Internal Medicine in June 2008).

To investigate the primary immune response, to an antigen that the horses would not have experienced before, they used rabies vaccine. Prince Edward Island is rabies-free and none of the horses had been vaccinated previously for the disease.

Influenza vaccination was used to assess the secondary ("anamnestic") response. All horses had antibodies to influenza at the start of the study - indicating that they had been exposed to the virus (or had been vaccinated) previously.

All horses were vaccinated with inactivated rabies and influenza virus vaccines. Four weeks later, half of the horses in each age group received a second influenza vaccine; the rest received a second rabies vaccination.

The researchers monitored the antibody response by collecting blood samples before the first vaccination and one-, two- and six-months later.

They found that healthy aged horses vaccinated against rabies showed a primary immune response similar to that of younger adults. However, by 6 months after vaccination the rabies antibody titres fell significantly in both age groups.

The anamnestic response was significantly reduced in the aged horses. Younger horses showed a significantly greater increase in two classes of anti-influenza antibody (IgGa and IgGb) after vaccination, compared with aged horses. This was despite the older horses having higher antibody levels at the start of the study which they maintained throughout the study.

Single radial hemolysis (SRH) gives a good indication of the level of protection against equine influenza. Using this test, the researchers found that 82% of all horses in the study had protective levels of antibodies six months after vaccination. So the age differences noted in antibody production may not be clinically significant.

The researchers also checked the serum concentrations of selenium (Se) and vitamin E, as deficiencies may adversely affect the immune system. A significant number of horses had serum selenium concentrations below ideal levels. However, the researchers could find no significant relationship between selenium status and the immune response in either the young or aged horses. With significant numbers of horses in each group with inadequate Se levels this may have reduced the ability to detect the effect of Se deficiency on the immune response.

They suggest that further research is warranted to determine the clinical significance of these findings.

At a time when there are plenty of reports of increasing resistance to dewormers, it’s encouraging to receive some good news for a change.

Research carried out by Dr Craig Reinemeyer and others at East Tennessee Clinical Research Inc., has revealed some positive findings.

In separate studies they examined the efficacy of dewormers against *Oxyuris equi*, and against macrocyclic lactone resistant *Parascaris equorum*.

*Oxyuris equi* (equine pinworm) rarely causes serious problems for the horse, but does cause irritation when the female lays the sticky eggs on the skin around the anus of the host. It has been assumed that most routine dewormers will control it.

However, anecdotal reports that anthelmintic treatments were not as effective against *Oxyuris equi* as expected prompted Dr Reinemeyer’s study.

Twenty-one horses with naturally-acquired *Oxyuris equi* infections were divided into three groups. One was treated with pyrantel pamoate (at 13.2mg/kg -the dose used for tapeworms); one group received ivermectin (200mcg/kg) and the third group was left untreated.

Fourteen days later, post mortem examination of large intestinal contents showed that both anthelmintics produced a significant reduction in numbers of *O. equi*. Pyrantel pamoate was 91.2% effective, and ivermectin 96.0% effective, against the adult worms. Both products were more than 99% effective against the fourth-stage *O. equi* larvae.

Unlike *O. equi*, *Parascaris equorum* does cause serious problems, especially in foals, in which heavy infections can lead to intestinal obstruction or rupture.

Recent reports have recorded an increasing problem of reduced efficacy of macrocyclic lactone anthelmintics (such as ivermectin) against these parasites.

In a study of experimentally infected foals, Reinemeyer and colleagues found that pyrantel pamoate administered at 13.2mg/kg was effective against a macrocyclic lactone -resistant (ML-R) isolate of *Parascaris equorum*.

Mean ascarid egg counts were reduced by 98.8% two weeks after treatment - compared with a reduction of only 47% two weeks after ivermectin (200mcg/kg). Post mortem examination of intestinal contents showed that the paste formulation of pyrantel pamoate was 97.3% effective against the MLR *P. equorum*.

It is reassuring to know that these drugs were effective under the specific conditions of the study. But that’s not to say that they will always remain so, or that the results are representative of all worm populations. The advice to treat for worms only when necessary and to monitor the effectiveness of any treatment still stands.

For more details see:


Pour-on anthelmintics

Recent studies disagree on the value of pour-on preparations of ivermectin for deworming horses.

Topical applications are easy to administer and may reduce the risk of injury to the operator. Pour-on anthelmintics have become popular for treating cattle and have been shown to be effective. Could they be used in horses?

A study\(^1\), supervised by Professor Adolfo Paz-Silva at the University of Santiago de Compostela in Spain, and published in the Equine Veterinary Journal, examined the use of a pour-on anthelmintic in naturally infected Pura Raza Galega horses.

The researchers applied an ivermectin-containing pour-on product at a rate of 1mg/kg (This was double the recommended dose rate for cattle.)

They compared the faecal egg production in treated and untreated animals over a 21 week period.

The faeces were clear of strongyle eggs between 3 and 9 weeks after treatment. Strongyle eggs reappeared in the faeces 10 weeks after treatment. Topically-administered ivermectin suppressed faecal egg production of *Parascaris equorum* and *Oxyuris equi* for the whole of the study period.

The treatment group also showed changes in the whole blood cell count - there was a significant increase in red cells, and a reduction in white cell count. No adverse side effects were seen.

The researchers concluded that the pour-on ivermectin preparation was highly successful against gastrointestinal nematodes. They suggest that it appears to provide a useful treatment option for large groups of horses at pasture.

However, a less favourable picture is painted by Dr Cengiz Gökbülüt and others in a report published in Veterinary Parasitology\(^2\).

Their study looked at the absorption of ivermectin after oral, topical or intravenous administration and how the mode of administration influenced the efficacy of the treatment.

Eighteen horses were divided into three treatment groups. One group was treated with equine oral ivermectin paste (at 0.2mg/kg); the second with bovine pour-on (at the recommended cattle dose rate of 0.5mg/kg) and the third group was treated with an injectable cattle preparation (given intravenously at 0.2mg/kg).

Compared with the oral paste, the pour-on preparation resulted in lower but more persistent plasma concentrations. It was also less effective at reducing the faecal strongyle worm egg count. The paste resulted in a reduction in egg count by over 95% for 10 weeks. In contrast the pour-on preparation gave reductions ranging from 82% to 97%.

The authors of the report suggest that factors that may account for the lower bioavailability of the topical preparation compared with the oral paste include binding of ivermectin to the hair, degradation at the site of application, and biotransformation of the drug in the skin.

They warn that the poor plasma availability after topical application could result in sub-therapeutic levels of ivermectin which could encourage the development of ivermectin-resistant parasites.

For more details see:


We may need to reconsider the treatment of eye infections in the light of research that found that horses produce more tears than previously thought.

Tears protect the eye by keeping the cornea moist. The tear film also carries nutrients to the cornea, which has no blood supply of its own. The same route is also used to deliver medication to the cornea.

How many tears does a healthy horse produce? How quickly is the tear film replaced? There have been few studies into this, yet it is important to know, as it will affect the concentration of drugs applied to the eye - and so may affect their efficacy.

Dr Thomas Chen and Dr Daniel A. Ward looked at the rate of production of tears in normal horses' eyes, in a study carried out at the College of Veterinary Medicine, University of Tennessee, Knoxville. A full report of the research, entitled "Tear volume, turnover rate, and flow rate in ophthalmologically normal horses", has been published in the American journal of Veterinary Research.

The researchers instilled fluorescein dye onto the eye and then collected small samples of the tear film, measured the fluorescein concentration, and noted how it changed with time.

They used two mathematical approaches to analyse the results. One method, which was considered the more accurate, suggested that the rate of tear production was 33.6L /min. The mean tear film volume was estimated to be 233.74 L.

The results showed that the tear film was likely to be completely replaced within a matter of 7 minutes.

This suggests that current treatment protocols may not be adequate, and that drugs may need to be administered more frequently.

For example, effective treatment of corneal ulcers infected with Pseudomonas aeruginosa may require high concentrations of antimicrobial medication to be maintained in contact with the cornea.

Based on their estimate of tear production, Chen and Ward calculate that to treat such infections with tobramycin, it may be necessary to administer the antibiotic at 30 - 45 minute intervals to keep the concentration in the tear film above the minimum level required to inhibit the growth of 90% of the organisms.

The study was performed on healthy eyes. Diseased eyes would not necessarily respond in the same way. If anything, the rate of tear production might be expected to be higher.

The authors recommend that similar studies be carried out on horses with corneal disease to discover the rate of tear production in those animals. However, until that is done, they question whether other systems of administration - such as more frequent dosing regimens or constant indwelling infusions might be necessary to ensure that adequate levels of medication are maintained in the tear film.

For more details see:

Tear volume, turnover rate, and flow rate in ophthalmologically normal horses.
T Chen, DA Ward.
American Journal of Veterinary Research June (2010) 71, 671-676
doi: 10.2460/ajvr.71.6.671
Equitation science discussed in Sweden

Horse welfare and rider safety can be enhanced by the application of new technology to the training of both horse and rider. That was one of the messages to come out of the 6th International Society for Equitation Science conference held recently in Sweden.

In the past few years there has been a growing interest in equitation science (the science of horse riding and horse training.) A selection of recent research, covering a wide range of topics, was presented at the conference, held this year at the Swedish University of Agricultural Sciences (SLU) in Uppsala.

Presentations covered training and education of horses and riders, from both a scientific and a practical perspective, and highlighted the importance of a thorough understanding of learning theory and physical capacities of the horse to safeguard horse welfare and human safety.

The first day focused on the mental and physical capacity for training and learning in both horses and humans.

The conference, attended by almost 200 delegates, also included practical demonstrations which took place at the Swedish National Equestrian Centre at Strömsholm.

Teachers from Strömsholm and the national stud at Flyinge demonstrated their approach to teaching young riders and training horses. Scientists from SLU presented examples of ongoing research projects, and showed how emerging technologies can measure important variables such as the pressure under saddle and the distribution of lameness.

The last day focused on the latest research in the field of horse welfare and human safety and, in a final panel discussion, the conference explored how these two topics can positively affect each other.

Abstracts of the presentations are available in pdf format for (free) download from the ISES website.

Horse Power CPD supports SPANA and BEVA Trust

In an extraordinary effort to raise money for charity, a group of equine vets and senior academics completed a whistle-stop tour of all seven British vet schools in convoy, on their motor bikes. They covered over 1000 miles in one week and delivered around 35 hours of lectures.

The aim was to raise essential funds for both the British Equine Veterinary Association Trust, which supports a wide range of important equine health and welfare projects both in the UK and overseas and SPANA’s Disabled Riding Centre programme in Bamako, Mali.

This marathon effort took place at the end of July 2010. The lectures were free - but donations were expected.

“The venues were well attended and delegates generous beyond our expectations” said Professor Derek Knottenbelt, the mastermind behind the event.

The event was so successful that the initial target was soon exceeded and a new one set. At the beginning of October 2010 the total raised stood just short of £80,000.

“The donation site will remain open for a while longer to enable us to reach this goal - we would all be very grateful if you could help!” added Prof Knottenbelt.

“Donations to a genuine charity with very strict governance is satisfying and a tax advantage.. there is no reason not to donate; give us a penny for very blessing and advantage you have had since your conception and in so doing help some disabled kids who, without your help, will not get five pence-worth of blessings in their short and difficult lives.”

To donate go to:

http://www.justgiving.co.uk/horsepowerCPD/2
Horses suffering lameness due to bone spavin can show marked improvement following treatment with a tiludronate infusion, in combination with controlled exercise, according to recent research.

Bone spavin is a chronic osteoarthritis of the lower hock joints. It is considered to be one of the most common causes of hindlimb lameness in horses and ponies - and may be responsible for up to a third of all such cases.

Often both hind legs are affected to some extent. Horses with straight or sickle-shaped hocks seem to be at greater risk of developing the condition.

There is little movement between the lower rows of bones in the hock. However these joints are subjected to considerable compressive forces. This can lead to degenerative changes within the bone and destruction of the joint cartilage.

In a paper published in the Equine Veterinary Journal, Dr Martin Gough and others describe a double-blind, placebo-controlled trial involving 108 clinical cases of bone spavin. The trial was performed at thirteen investigation centres in the UK and Ireland.

Pleasure horses, show jumpers and eventers of a variety of sizes and breeds, all of which had been clinically diagnosed with bone spavin, were enrolled in the study. The horses were rigorously selected, having to show clinical signs of spontaneous lameness of at least six weeks but less than a year’s duration and had to be in daily exercise. Horses suffering proximal suspensory desmitis were excluded.

Horses were defined as suffering from bone spavin if they displayed a chronic hindlimb lameness which improved with distal tarsal joint analgesia and showed radiographic evidence of bony changes consistent with bone spavin in the distal tarsal joints.

The horses were treated at day zero with a single tiludronate infusion or a placebo and reassessed 60 days later after a period of controlled exercise.

Eighty seven horses completed the trials: 42 tiludronate treated horses and 45 placebo cases. By day 60 approximately 60% of the Tiludronate treated horses had improved in lameness by two grades or more, scored on a ten point system.

Bone is a very dynamic tissue, constantly being formed and resorbed throughout a horse’s life. In the healthy adult skeleton the rate of bone turnover is balanced. New bone is formed by cells called osteoblasts; while cells called osteoclasts are involved in resorbing bone.

If the balance between bone formation and resorption is disturbed, disease can occur. Horses with bone spavin experience abnormal bone remodeling changes, occasionally with excessive bone resorption in the tarsal bones.

Tiludronate is a bisphosphonate - a bone metabolism regulator - which inhibits bone resorption. It acts by inhibiting osteoclasts. Osteoclast activity is thought to be painful - so blocking it should reduce the pain.

Tiludronate is believed to work by slowing down the degradation of the bone structure when the condition is progressing and alleviating the pain associated with abnormal bone lysis.

Tiludronate effective for bone spavin

Bone spavin is a common cause of hindlimb lameness

For more details see:

Tiludronate infusion in the treatment of bone spavin: A double blind placebo-controlled trial.
MR Gough, D Thibaud, RKW Smith

This research was funded by CEVA Animal Health, manufacturers of Tildren®. For more information visit the website: www.tildren.com
Have you ever wondered what goes on in an equine exercise physiology laboratory? Well now you can see behind the scenes thanks to The Rutgers Equine Science Center, which has launched a virtual tour of their equine exercise physiology laboratory.

A photographic storyboard takes visitors through the laboratory, showing the processes involved in completing a graded exercise test and a simulated race test, the two types of equine exercise tests conducted at the treadmill lab.

The virtual tour is presented in three sections: Preparing for an Exercise Test; Performing an Exercise Test; and Exercise Test Data Analysis. Each section contains pictures and descriptions of the various stages of the test.

The equine exercise physiology laboratory is an extremely popular research site on the G.H. Cook Campus of Rutgers University primarily because of the treadmill. By creating the online virtual tour of the lab, visitors to the Equine Science Center website get an inside look at how and why equine scientists use a treadmill, and a complete overview of the entire process.

“We had to turn people away at the laboratory door on Rutgers Day earlier this year; people were standing in line for a half hour to witness our research mare on the treadmill,” said Karyn Malinowski, director of the Equine Science Center. “The treadmill always draws a big crowd as people are eager and excited to see such a majestic and powerful animal galloping full-speed. It is an exhilarating sight.”

According to Malinowski, the virtual tour of the treadmill laboratory, as well as a video demonstration of a horse exercising, offers equine enthusiasts an opportunity to learn about the science and research of the Equine Science Center as well as the thrilling experience of witnessing a horse on a treadmill. Best of all, the tour is available at any time from the comfort of one’s home.

“At the Equine Science Center, we firmly believe in broadening our horizons as we bring better horse care through research and education,” added Malinowski. “The virtual tour of the exercise physiology laboratory provides another modality to enable us to reach the equine community.”

The virtual tour is accessible through the Rutgers Equine Science Center’s website on the Equine Exercise Physiology Laboratory page. (http://www.esc.rutgers.edu/exercphyslab/treadmilllanding.htm)

To see a video of a horse working on the treadmill, go to:

http://njaes.rutgers.edu/equinesciencecenter/treadmill.html

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**Get the latest news**

Check out the Equine Science Update blog:

http://equinescienceupdate.blogspot.com/
**Horses that won't lose weight may need stricter diet**

New research confirms that some obese horses and ponies may need to have their diets restricted more severely than previously thought in order to help them lose weight.

The studies were conducted by the Department of Veterinary Clinical Science at the University of Liverpool and funded by the government-initiated Knowledge Transfer Partnership and the WALTHAM Equine Studies Group. They showed that although some obese animals will lose weight, in an appropriate way, on a diet restricted to 1.25% of body weight (on a dry matter basis), others may need their diet restricted to as little as 1% of body weight in order to shift those surplus pounds. Such animals have been described as being ‘weight loss resistant’ in a report presented at the WALTHAM International Symposium in September.

This work has been published as an abstract in the proceedings of the 5th European Workshop on Equine Nutrition and will be written up and published as a full paper in the future.

The study, which was conducted over 16 weeks, involved 12 overweight/obese horses and ponies of mixed ages and breeds, with body condition scores of between 7 and 9 (1 being emaciated and 9 being obese). They were individually housed on wood-shavings and provided with a balanced fibre-based diet at 1.25% of body weight. They were allowed daily access to a bare paddock but no structured exercise was given. Eight of the horses achieved a slow, gradual but consistent loss of body weight over the study period but weight loss was much slower in the remaining four.

These four horses, deemed to be weight loss resistant, were monitored for a further four weeks during which their diet was reduced to 1% of body weight daily. This significantly increased their rate of weekly weight loss, to a level comparable to the weight loss seen in the other eight horses in the original study. It is thought that genetics may account for such individual differences in sensitivity to weight loss. In all cases the horses remained healthy and no stereotypic behaviours were seen.

Dr Caroline Argo explained: “It is important to understand that the appetite of obese ponies will drop to around 2% of body weight (dry matter) yet their body weight will be maintained or they may even continue to gain in weight. If weight loss is to be stimulated, food intake must be limited quite severely.”

Clare Barfoot BSc (Hons) RNutr, the research and development manager for SPILLERS® and a member of the research team added: “Controlled but balanced nutrition, under careful veterinary guidance, is essential to promote weight loss in overweight or obese horses and ponies, especially when exercise is not an option but we have had little evidence-based advice on how far the diet can be restricted safely to help shed weight in stubborn cases until now.”

“In practice where exercise can be used to increase energy expenditure, such severe restriction may not be required; in this situation access to grazing must be reduced, exercise increased and a low calorie high fibre forage fed in a monitored way alongside an appropriately formulated forage balancer.”

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Updated Foaling Guide now available.

Waiting for a foal to arrive can be a daunting prospect. The Foaling Guide gives you the background knowledge and information you need to approach the event with confidence. Know what to expect, what can go wrong and what to do about it.

For more details go to: www.TheFoalingGuide.com
Belly girth measurements are a better way to assess early weight loss according to recent research.

One of the problems faced by owners of overweight horses, is monitoring the response to weight loss programmes. Obviously weighing the horse would be ideal but is often not possible. Weight tapes placed around the heart girth (just behind the elbow) may not detect any change despite a decrease (or increase) in body weight, because that is not where the excess fat is deposited.

Two recent weight loss studies have both shown that belly girth* measurements are more closely related to changes in bodyweight in early weight loss (after the first week of feed restriction) as opposed to the more commonly used heart girth measurements. They may even be more accurate than some ultrasound fat measurements.

A study\(^1\) conducted last year by researchers at the Department of Veterinary Clinical Science at the University of Liverpool and supported by World Horse Welfare, highlighted the need for a more accurate method for monitoring early weight loss in overweight ponies rather than relying on conventional equine body condition scoring.

A further study\(^2\) comparing two practical weight loss protocols for the management of overweight and obese horses and ponies was conducted earlier this year by the Department of Veterinary Clinical Science at the University of Liverpool. It was funded by the government-initiated Knowledge Transfer Partnership and the WALTHAM Equine Studies Group. It confirmed that the proportional change in belly girth was more closely associated with changes in body weight than the proportional change in heart girth in the early stages of weight loss.

Dr Caroline Argo and Alex Dugdale of the Department of Veterinary Clinical Science at the University of Liverpool said: “It is important for owners to understand that early weight loss is not immediately recognisable as a change in the horse or pony’s overall appearance or body condition score. However, owners do need some assurance that measures taken to promote weight loss are being effective. Simply measuring belly girth at regular (weekly) intervals can provide this. Without such reassurance, we might be inclined to either give up or more alarmingly, harmfully increase our efforts to induce weight loss.”

Clare Barfoot, the research and development manager for SPILLERS® and a member of the research team for the second study continued: “Our findings clearly support the concerns raised in the initial study on the accuracy of using conventional body condition scoring or heart girth measurements to monitor early weight loss. Although weigh tapes used around the heart girth can estimate bodyweight they are not as reliable in picking up early weight changes in weight loss programmes. Measurements around the belly girth have proved to be a more reliable way to monitor weight loss although it is important to ensure that the initial measurement is taken a week after food restriction to accommodate initial losses in gut fill and water, and that measurements are taken in a standard way at a similar time of day.”

Samantha Lewis, Right Weight Manager for World Horse Welfare, commented: “This research will be of great benefit to owners who are taking steps to help their horses lose weight by enabling them pick up on changes at an earlier stage. While weight tapes used at the heart girth can be useful to obtain estimates of body weight, changes in belly girth may be more sensitive for monitoring early changes in weight when obese ponies are encouraged to lose weight.”

The researchers are still working on validating a more accurate body condition scoring system, based on the findings. In time they hope to be able to create a more effective weight loss assessment method for owners to use.

* Taken at the widest point of the belly; approximately two thirds of the way between the point of the shoulder and the point of the hip.

1 Managed weight loss in obese ponies: evaluating weight change, health and welfare, A Dugdale, G Curtis, C McG Argo, (Department of Clinical Science, University of Liverpool, UK), PA Harris (Equine Studies Group WALTHAM Centre for Pet Nutrition, UK).

2 CG Curtis, AHA Dugdale, D Grove-White and C.McG Argo. (University of Liverpool, UK) PA Harris. (Equine Studies Group WALTHAM Centre for Pet Nutrition, UK) CF Barfoot. (Mars Horsecare UK Ltd)
**Managing pasture to reduce laminitis risk**

A new report provides owners with practical information on how to manage their pasture to reduce the risk of laminitis in horses and ponies.

The search for improved meat, milk and fibre production has led to the development of grasses containing high levels of non structural carbohydrates (NSC - sugar, starch, and fructan).

The non-structural carbohydrate content can increase dramatically if the pasture is exposed to extreme conditions - such as intense sunshine, drought and cold stress. Such pasture presents a high risk for horses and ponies susceptible to obesity, insulin resistance and laminitis.

But with good pasture management, these conditions can be minimised.

The report, entitled "Equine Laminitis - Managing pasture to reduce the risk", is written by US -based agronomist Kathryn Watts and Professor Chris Pollitt, Director of the Equine Laminitis Research Unit at the University of Queensland, and published by Australia’s Rural Industries Research and Development Corporation (RIRDC). It outlines how horse owners can reduce the level and concentration of sugar, starch and fructan in their pastures. High levels of these carbohydrates can cause laminitis in horses and ponies.

According to Professor Pollitt, the report represents an important step forward in the understanding of pasture associated laminitis.

“While there are still significant gaps in our knowledge about laminitis, a source of great frustration to horse owners and veterinarians alike, we do know that what the horse or pony has eaten over the last few days, weeks or months may trigger laminitis,” Professor Pollitt said.

“Pasture management techniques such as timely slashing, proper fertilising and avoiding species that are high in sugar, starch and fructan can go a long way to reducing the risk of horses developing laminitis.”

Tony Burne, Acting Managing Director of the RIRDC commented that "some pasture management practices that minimise pasture NSC also happen to be important features of environmentally friendly, sustainable land stewardship.”

For example planting trees to provide wooded grazing areas, will limit the exposure of the grass to sunlight, leading to lower NSC content of the pasture. Such a strategy has added benefits will also help to reduce erosion and improve the water balance.

The report was written "for those owners who are prepared to make a serious effort to learn how to grow the "best pasture and seek the "best" feed to prevent and manage laminitis."

The report was launched in June at the Australian Equine Science Symposium, and is the latest in a series of RIRDC reports focussing on improving horse health.

*Equine Laminitis – Managing pasture to reduce the risk* is available at [www.rirdc.gov.au](http://www.rirdc.gov.au)

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**Making racing safer**

What can be done to limit the number of horses dying as a result of racing injuries? It is hoped that analysis of data on fatal injuries will offer some suggestions.

At the third Welfare and Safety of the Racehorse Summit held at Keeneland, Kentucky on June 28 and 29, Dr. Tim Parkin, epidemiologist from the University of Glasgow’s Faculty of Veterinary Medicine, presented a preliminary analysis of racing fatalities in North America from data compiled in the Equine Injury Database (EID).

The analysis was based on data on Thoroughbred flat racing in the EID collected on 73 racetracks between November 1, 2008 and October 31, 2009 - a total of 378,864 starts. Horses that suffered a fatal injury during or immediately after a race, or that died later as a result of an injury that occurred during racing, were included in the analysis.

Among Dr Parkin’s findings were:

Starts made by 2-year-olds were less likely to end in fatality than starts made by older horses. Females were not at increased risk of fatality when racing against males. Starts made by females were less likely to end in fatality than starts made by intact males.

No statistically significant difference was found in the incidence of fatality on different surfaces, with different surface conditions, in different race distances, or in horses carrying different weights.

No firm recommendations can be made at this stage. As the data contained in the EID continues to grow, some of the current statistical conclusions may change as a reflection of increased certainty associated with a larger data set.

“This preliminary analysis just scratches the surface,” said Parkin, who
The Animal Health Diagnostic Center at Cornell University is now offering a genetic test for Lavender Foal Syndrome (LFS).

LFS is a fatal disease of newborn Arabian foals, particularly those of Egyptian Arabian breeding.

Signs shown by affected foals include seizures, nystagmus (involuntary movement of the eyeballs), limb rigidity, paddling movements, and opisthotonus (hyperextension of the head, neck, and spine).

The condition gets its name from the abnormal coat color with which most affected foals are born, variably described as silver sheen, lavender, pale chestnut or pale, dull pinkish grey.

Scientists at Cornell University and the Maxwell H Gluck Equine Research Center have found that Lavender Foal Syndrome is the result of a mutation in a gene called myosin Va (MYO5A). All affected foals tested in the study were homozygous for this mutation (i.e. both copies of the gene were defective).

Lead researcher was Samantha A. Brooks, PhD, assistant professor in the Department of Animal Science at Cornell University's College of Agriculture and Life Sciences. “Our results suggest that the population frequency of carriers of this deletion is 10.3% in the Egyptian Arabian,” she reports.

“From a practical standpoint, this discovery and the development of a diagnostic test for the LFS allele provides a valuable new tool for breeders seeking to avoid the disease in their foal crop.”

Testing of breeding animals is recommended to identify carrier horses. The breeding program can then be arranged to avoid mating two carriers, and so prevent the birth of an affected foal.

The test can be run on hair roots pulled from the mane or tail, or whole blood samples. Normally, the AHDC only accepts samples from accredited veterinarians. However, for this test, Arabian owners are encouraged to submit their own pre-paid samples directly to the laboratory.

The Lavender Foal Syndrome test is not restricted to horses within the USA. Shipment of EDTA whole blood samples from abroad requires a USDA permit. However, according to the laboratory no permit is required for sending hair samples.

(Permits may not be available for the import of blood specimens from some countries. Please contact the laboratory (Lisa Bowen-Laue; 607-253-3938) for the appropriate permit if you wish to submit EDTA whole blood for LFS testing from outside the USA.)

Each sample must be sent with a completed LFS assay submission form. Payment must accompany the samples unless they are submitted by a licensed veterinarian.

Information on the new test, including full instructions on how to submit samples, can be found on the LFS page of the Cornell University College of Veterinary Medicine website. See:

http://ahdc.vet.cornell.edu/issues/lfs.asp

Dr. Mary Scollay, equine medical director for the Kentucky Horse Racing Commission and a consultant on the Equine Injury Database. “This begins to answer the question of what is happening. The ‘how’ and ‘why’ remain to be determined.”

For more details see:

Wounds to the horse's lower limbs are commonly complicated by the development of exuberant granulation tissue ("proud flesh"). This may delay healing and make scar formation more likely.

Dr Andressa Silveira and colleagues at the University of Guelph in Ontario, Canada, have been examining the value of shock wave therapy for promoting healing.

They found that wounds treated with unfocussed extracorporeal shock wave therapy (ESWT) seemed to produce less exuberant granulation tissue, and looked healthier than untreated wounds, although they did not heal more quickly.

The researchers made five full-thickness skin wounds, (2.5 cm x 2.5 cm) on the dorsal aspect of the metacarpus of both fore limbs of each of six horses.

They treated one leg from each horse with ESWT, and left the other limb untreated to act as a control.

The wounds were treated immediately after they were made and then at weekly intervals for a total of four occasions. Each treatment comprised 625 pulses - distributed evenly around the wound and surrounding healthy skin edges.

The researchers found that control wounds were more likely (1.9x) to appear inflamed than were treated wounds. Untreated wounds also had higher exuberant granulation tissue scores.

However, there was no significant difference between biopsies taken from treated and untreated wounds at weekly intervals throughout the study. Neither did treatment have any effect on wound size.

Further investigations are required before shock wave therapy can be recommended for wound treatment. ESWT may be helpful, but so far, there is not enough evidence to support its use in clinical cases.

For more details see:

Effects of unfocused extracorporeal shock wave therapy on healing of wounds of the distal portion of the forelimb in horses.

For shock waves to aid healing?

Do shock waves aid healing?