

British
Equine
Veterinary
Association
Trust



First aid for horses

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Nick Mills qualified from Jesus College, Cambridge University Veterinary School in 1978 where he was a keen sportsman (Cambridge University Pole-Vaulter), Wyndham Deedes Scholar and did some of the early research on avian influenza. This included leading the Cambridge Expedition to the Lofoten Islands in the Norwegian Arctic to collect avian influenza samples from the breeding seabird population.

On graduating, Nick was an assistant at Crowhurst and Partners, Maidstone, before working as anaesthetist for the Save the Rhino Trust in Luangwa, Zambia. He returned to the UK and became a partner, and more recently senior partner in the 6 centre Cinque Ports Veterinary Associates based in Kent and Sussex.

Nick is a successful inventor, eg with Mirotec (South-East Inventor of the Year 1995) and was also awarded the BEVA Sam Hignett Memorial Award in 1995 for his work on wound lavage including the development of the Mills Wound Lavage System. Nick is an adviser to several leading insurance underwriters and lectures to various veterinary schools on wound healing.

Nick is a fully trained mediator and is a trustee of several conservation charities including Fauna & Flora International, Wildlife Vets International, The Pet Plan Charitable Trust, The Durrell Institute of Conservation Ecology (DICE) and The Great Dixter Trust.

Introduction

At some stage in your life with horses you are likely to find yourself having to cope with an emergency requiring First Aid.

RULE 1: 'Don't panic . . . Mr Mannerling'.

The aims of first aid are:

- to preserve life;
- to prevent suffering; and
- to prevent the situation deteriorating.

Prevention of worsening:

- avoid drying;
- avoid further contamination;
- prevent haemorrhage;
- protect from movement; and
- control pain.

It is obviously very helpful if some thought has been given to prevention of serious problems and also a simple risk analysis in the yard where your horse is kept. The Veterinary Inspection of Riding Establishments is a well run organisation and offers some useful guides to prevent problems.

The telephone numbers of the veterinary surgeon should be prominently displayed, together with a list of what should be done in the event of a fire (where are the fire hoses, extinguishers etc).

A good first aid kit should be available for both the horses and riders.

The tack should be checked regularly to ensure that it is sound. Ideally, the horses should be vaccinated against tetanus, influenza, equine herpesvirus and strangles.

But even with good foresight and preparation accidents do occur. As the horse's natural and evolved reaction to any perceived danger is to gallop away at high speed it is no wonder that lacerations are probably the most common reason for urgent first aid.

Initial wound management

A good knowledge of the horse's anatomy is essential in accurately assessing the importance of wounds.

Large and impressive wounds on the main body of the horse will often have far less significance than innocuous looking puncture wounds over joints, tendons and tendon sheaths.

Initial wound management is very important and wound lavage has a key role in this.

The presence of foreign bodies and bacteria can be dramatically reduced by the correct lavaging of wounds which can have substantial advantages over the traditional method of mechanically swabbing wounds. However, it is important that the method used in lavaging is correct to gain the maximum benefit.

Why lavage wounds?

Clinicians have noted that old wounds cannot be successfully closed by primary intention. This gave rise to the belief that there was a 'GOLDEN PERIOD' – the first 6 h after injury where successful wound closure could take place. Scientifically, the concept of the 'GOLDEN PERIOD' has some foundation. It has been demonstrated that wounds containing greater than 10^5 bacteria/gram of tissue cannot be safely closed due to a high infection rate. As bacteria multiply over time, older wounds tend to be the most contaminated.

Early wound management should therefore concentrate on reducing contamination to below this level.

Infection if present will delay healing by:

1. Mechanically separating the wound edges with exudate.
2. Reducing the vascular supply.
3. Prolonging the inflammatory phase of wound healing.
4. Producing proteolytic enzymes that digest collagen.
5. Damaging the vascular supply therefore preventing systematically administered antibiotics from effectively penetrating the injured site.

Infection potentiating factors, eg the presence of soil in wounds, will inhibit leucocyte function and inactivate serum antibodies, therefore interfering with natural tissue defences.

Effective wound lavage can reduce bacterial contamination to below 10^5 /g of tissue where wounds are likely to heal with less complications.

Irrigation of contaminated wounds is an example of the application of a fluid dynamical force to bacterial cells. Doubling the velocity of wound irrigation quadruples the cleansing effect.

Very small particles such as bacteria require higher pressures to remove them.

Advantages of controlled wound irrigation versus mechanical wound swabbing

1. Less traumatic to the wound tissues.
2. Less painful for the patients.
3. More effective in removing foreign bodies from the wound.
4. More effective in reducing bacterial contamination.
5. Cotton wool/gauze fibres can adhere to the wound surface during swabbing further contaminating the wound.

What solution?

Sterile isotonic saline is considered best (sterile water can cause cell oedema and anti-septic solutions tend to be cytotoxic).

What quantity?

Copious quantities of sterile saline are required for effective wound lavage.

250 ml of sterile saline achieves high reduction in bacterial numbers while being relatively easy to administer.

Wound lavage and hydrogels

The combination of a topical hydrogel and wound lavage can be particularly effective in initial wound management and in reducing bacterial contamination of wounds.

Contaminated wounds

It has been demonstrated that even in the face of well established infections, if hydrogel is applied to wounds for in excess of 12 h before removal by lavage then a profound reduction in bacterial contamination is observed. This reduction was achieved whether the hydrogel was put into the wound immediately after contamination and left *in situ* for 24 h, or added 12 h after contamination and left *in situ* for a further 12 h prior to lavage.

This procedure had the effect of reducing the bacterial population by over 95%.

Once the lavage has taken place, the wound can either be prepared for primary wound closure or treated with an appropriate dressing regime.

Therefore, it may be sensible for horse owners to put hydrogel into the wound before calling for veterinary attention.

Fractures and first aid

The days of leg fractures in horses requiring immediate destruction are fortunately long gone and, with improved orthopaedic techniques, the limiting factor in a fracture repair is frequently the condition of the soft tissue sustained at and after the initial injury.

For the best chance of a successful repair the aims are:

- Restrict further soft tissue damage.
- Prevent the fractured bone from penetrating the skin (ie prevents the fracture from becoming compound).
- Stabilise the fracture to prevent further bone damage.

Forelimb fracture splinting

If we divide the forelimb into 4 regions:

REGION 1

Distal to distal metacarpus

With the aim of aligning the dorsal cortices a Kinzey splint is ideal.

REGION 2

Structures between the distal metacarpus up to the distal radius

A Robert Jones dressing is best applied with wooden supportive splints on the lateral and caudal surfaces of the dressing from the ground to the elbow.

REGION 3

Fractures of mid and proximal radius

A Robert Jones dressing from the foot to the elbow with a lateral wooden splint extending from the ground to the mid scapula level.

REGION 4

Fractures of the ulna, humerus and scapula

The triceps muscle is disabled in these fractures and therefore if the carpus is fixed the horse gains a lot more confidence. This can be achieved with a Robert Jones and a splint taped on the caudal aspect of the limb.

Hindlimb fracture splinting

Region 1 (H)

As with the forelimb a Kinzey splint is the splint of choice.

Region 2 (H)

A Robert Jones dressing with lateral and medial wooden splints is ideal.

Region 3 (H)

This includes fractures of the tibia and tarsus.

A Robert Jones should be applied from the foot to the stifle and a special splint bent from a 12 mm diameter mild steel rod should support this area.

Any WOUNDS should be cleaned and dressed before splinting the limb.

Transportation

Ideally a horse with a forelimb fracture should face the rear of a trailer and a horse with a hindlimb fracture should face forwards. This means that the weight is thrown onto the good legs when the trailer stops.

Handling and transport of injured animals

- The airway must be checked and cleared if necessary.
- Haemorrhage must be controlled.
- Wounds should be lavaged and dressed.
- Fractures should be immobilised.