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They shoot horses, don't they?

Preferred method of euthanasia on the racecourse is now by injection, not a bullet

The decision by the *Daily Mirror* to publish photographs of Wigmore Hall being shot on the racecourse after he sustained an inoperable leg injury triggered a cascade of events which has led to the introduction of a new policy by the BHA.

It states that euthanasia on the racecourse should be by means of chemical injection whenever possible. From March 28, if a veterinary surgeon uses a free bullet firearm on the racecourse, then he or she has to account for their actions in writing to the BHA, explaining exactly why it was necessary to use a gun. So although the use of a firearm has not been banned outright, we can assume that its use will diminish in the future.

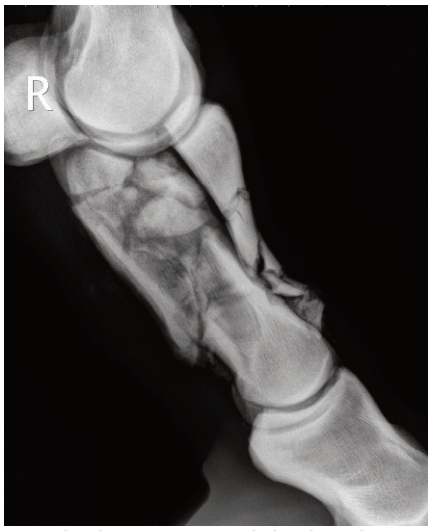
This decision has not been universally welcomed, with the National Trainers' Federation opposing the restriction on the use of a firearm. So what are the pros and cons of the methods available to carry out this distressing but sometimes inevitable consequence of racing our horses, and what are the alternatives?

Option 1: Free-bullet humane killer

A humane killer is a firearm specifically designed for the destruction of horses. Usually of .32 calibre, these weapons normally have an escape port in the barrel situated just before the bullet leaves the gun, to allow some of the explosive gas to escape prematurely, thereby slowing the velocity of the bullet itself.

However, these bullets can still go a long way and do serious harm if not directed correctly to ensure that they don't emerge from the horse. When used in the correct site, usually just above the intersection of a pair of diagonal lines drawn between the eye and the ear, the bullet causes instantaneous death. Horses cannot be killed instantly in the same way using a captive bolt device, as used to 'stun' cattle in the slaughter-house, hence the need for a 'free' bullet.

In all mammals, when the surface of the eye is touched there is an involuntary protective reflex action of vigorous blinking. This corneal reflex is used as a sign of the viability, or otherwise of the brain, and in horses which have been shot this reflex disappears immediately, giving us some comfort that the horse is dead from the moment of impact of the bullet. There is no delay. This profound 'brain-dead' state leads however to some unfortunate side effects. Many of the common behaviours of the horse are complex reflex behaviours, patterns of movement, controlled and mediated within the spinal cord, without direct involvement of the brain. For many of these all that the brain does is simply switch 'on' or 'off' the reflex pattern.



A multiple comminuted displaced fracture of the first phalanx (pastern). This type of injury is rare, but when it does occur, it is often in a horse which has shown no previous lameness. This is the type of injury for which there is no successful treatment available, and which would merit immediate euthanasia on the racecourse

An example is the rhythmic wave of rippling of muscles and skin as a 'shiver' which horses commonly do to shake off flies. This is known as the panniculus reflex, and it is triggered in the normal horse by gentle focal stimulation of the skin of the flanks and back. Once the brain is removed from the equation it's not uncommon for this reflex to take place as the horse lies on the ground and this can be disturbing to onlookers as they think the horse is still alive. Similarly, galloping behaviour or reflex kicking out to a touch can happen for the same reasons.

Finally, when the oxygen receptors which normally control breathing detect a very low level of oxygen because the heart has stopped, a sequence of rapid vigorous breathing movements, termed agonal gasping, takes place. Again, although this is a reflex action and is nothing to do with the horse being conscious, it can be distressing to the uneducated onlooker. The use of screens at the racecourse is not designed simply to prevent the public seeing the use of the gun, but also stop them witnessing these potentially distressing reflex movements, all of which occur following death.

There are two big advantages to the use of the gun. One is that it is usable in a recumbent animal which may be flailing its front legs, therefore making the placement of an intravenous catheter for chemical euthanasia difficult or dangerous. Second, it results in no chemical residues in the carcass.

Although horses can no longer be used for commercial pet food without going through an EU-approved meat inspection plant, their meat can be used for feeding to foxhounds, racing greyhounds or zoo animals, thereby avoiding carcass destruction costs for the owner.

Given that these range from £300 to £500 per horse, this is a significant factor. In conjunction with this, point-to-point competitors also usually wish to support their hunt by the very nature of their sport, and the provision of free meat for the hounds is one way in which they can do this.

Option 2: Chemical euthanasia

For many years a variety of drugs has been available for use in euthanasia of the horse. Most of these centred around the use of an anaesthetic agent which would produce recumbency and unconsciousness in the horse followed by another agent designed to either stop breathing or the functioning of the heart or both.

In recent years a combination of drugs pre-mixed as a cocktail has been available called Somulose. This drug contains a profound anaesthetic agent in conjunction with a drug specifically designed to stop the heart. Usually deep sedation is produced in the horse first by the use of drugs such as detomidine and butorphanol. This is essential, as the volume of liquid which needs to be injected is large and the injection has to be done slowly, taking ten to 15 seconds.

Once the horse is sedated and calm, then

an intravenous catheter can be placed to ensure that the injection is all delivered intravenously and that euthanasia will take place rapidly. When done correctly, this method results in a relatively controlled collapse of the horse, no different to that which would occur during routine anaesthetic procedures in an equine hospital. Once on the ground, death rapidly ensues because of a cardiac arrest produced by the second component of the drug.

The disadvantages to the use of Somulose are that access to a vein can be difficult (for instance a horse with a broken neck in the bottom of a ditch), the large volume and slow injection speed may be impractical in a horse which is highly distressed, and finally that the carcass becomes contaminated with a potentially toxic drug combination, thereby precluding its feeding to hounds. Because the horse is profoundly anaesthetised at the time of collapse, reflex movements following death are fortunately seldom seen.

The statistics

As Dr Peter Webbon, the former senior vet of the Jockey Club, pointed out in his press release following the sensationalist use of the photographs by the *Daily Mirror*: "Racehorses in Britain are among the healthiest and best looked after 2% of horses in the country. The sport employs over 6,000 people to provide first-class care and attention for the 14,000 horses in training, providing them with a level of care and quality of life that is virtually unsurpassed by any other domesticated animal. In exchange for these exceptional levels of care, racing asks thoroughbred racehorses to do what they are bred to do, which is to race."

He went on to say that, as with any sport involving speed and athleticism, there is a risk of injury, but that the risk of fatal injury is incredibly small and is logged at 0.2% of all runners. The figure has reduced by a third in the last 15 years thanks to increased diagnostic capabilities picking up problems at home.

What the editorial team at the *Daily Mirror* failed to point out was that Wigmore Hall was the only fatality at Doncaster in the whole of the year, from over 1,500 runners. We also have to accept the fact that an animal weighing 500kg and capable of travelling at 35 miles an hour is always going to be at risk of injury, whether raced or not.

A recent study at the University of Liverpool showed that 62% of traumatic injuries occurred whilst at grass turned out in a field, and only 13% during ridden exercise. The risk of injury to the horse could never be reduced to zero, even in a field.

Firearms foregone

The BHA rule change which makes it more difficult to use a firearm on racecourses is perhaps an inevitable consequence of the graphic photographs that the *Daily Mirror* chose to publish.

At the time of their publication, Robin Mounsey, Media Manager for the BHA, commented: "We are appalled at the *Daily Mirror's* decision to publish these photos, and also to contextualise the images in the manner that they have. All that the images show is a veterinary surgeon doing his job in carrying out an act of humanity to prevent an animal from suffering."

> *"The risk of fatal injury on the racecourse is small – only 0.2% of all runners"*

Despite these protestations, the BHA decided to move against the use of firearms. Although the risk is very small when a firearm is used correctly, there is no question that the use of a free bullet does involve some potential risk to both the horse's attendants and to the general public – a risk which is not present following the use of chemical restraint and euthanasia. Using the standard principle in risk assessment that, where a risk can be reduced, it should be reduced, then preference should probably be given to the use of chemical euthanasia where possible anyway.

While the move mimics the natural progression among younger members of the veterinary profession away from use of firearms and towards chemical euthanasia, it seems a shame that this rule change will be seen by some as caving into pressure exerted by the animal rights group Animal Aid. They took and supplied the photographs, and the *Daily Mirror* chose to publish them, yet one of the declared aims of Animal Aid is for the total abolition of all horseracing, a sport which the *Daily Mirror* is happy to cover in its sports pages.

Neither group has advanced its cause or done anything to help the welfare of the horse by their actions. Potentially, the reverse has been achieved.

On-track equine welfare in action...

The Horse Comes First campaign has been at the forefront of efforts to promote the high level of care provided to racehorses in the UK. Indeed, more than £27 million in veterinary research and education has been invested by British racing, via the Levy Board, since 2000, with the aim of benefiting all breeds of horse.

Talking about the current procedures for treating a horse with a potentially serious injury, Simon Knapp, the Racecourse Association's veterinary consultant, and the senior vet at Sandown and Kempton, said: "Over the years the quality of racecourse cover, medical and veterinary, has improved dramatically. We will be at the scene within 60 seconds of the incident occurring.

"As soon as we arrive we get intravenous access by placing a catheter before blood pressure drops and shock takes over, so whatever happens to the horse we're prepared for the next stage.

"We will set up 360-degree screening, not because we have got anything to hide but so we have no distractions and the horse has no distractions. They act as a pacifier."

He continues: "Our aim is to take the horse off the track and move it to the on-course veterinary unit, where there is a quiet environment, with diagnostic equipment such as ultrasound and x-ray. X-rays can be emailed, giving access to top orthopaedic specialists who can tell us what's possible.

"The vast majority of horses can be moved humanely from the track, but it's a fact of life that a small minority can't, in which case we do what's right by them on the track."

Within the last 20 years the equine fatality rate in British racing has fallen from 0.28% of all runners to 0.22%.

British racing equine fatalities

Year	Runners	Fatalities	Percentage
1994	71,475	202	0.28
2010	92,066	223	0.24
2011	94,776	181	0.19
2013	91,146	196	0.22
2014	86,456	189	0.22