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## **Development of facial expression pain scale in horses**

### **A new standardized scale of facial expressions to help horse managers discern pain**

Through the results of a recent study, researchers from Italy, Germany and the UK have developed a standardized Horse Grimace Scale (HGS) to assist in pain detection in horses. The scale is easily trainable to laypersons, and could positively impact the welfare of horses that have undergone routine surgical procedures such as castration.

Only a minority of horses undergoing routine castration in Europe receive post-operative pain control, even though the procedure is known to be painful. According to Dr Michela Minero, who presented the research group's findings at the 2013 ISES conference, "Annually, it is estimated that 240,000 horses are castrated in Europe, and castration has been shown to be associated with a certain degree of pain. However, only about 36.9% of horses receive analgesics for post-operative pain. One of the possible explanations for this is that the assessment of pain in horses undergoing castration is still sub-optimal."

Forty-six stallions of varying breeds, ranging in age from 1-5 years were used in the study. The horses were divided into one of two treatment groups and a control group. Treated horses underwent routine surgical castration using closed technique. Group A (19 horses) received one injection of Flunixin-Meglumine commonly known as Banamine™ immediately prior to anaesthesia, while group B (21 horses) received the same drug both prior to anaesthesia and 6 hours post-operatively. A control group of 6 horses requiring non-invasive diagnostic procedures under general anaesthesia were also used in the study.

All of the horses studied were hospitalized for 5 days. As a baseline, high definition videos of the horses were taken both for 30 minutes on the day prior to surgery, and 8 hours post-operatively. Video recording continued over the 5 day period, from which high quality images of the horses' faces were extracted. These images were then scored by five treatment-blind observers.

Subtle changes in facial expressions/changes indicative of communicating pain have been identified in other species, and the researchers hoped to be able to standardize such expressions in horses. One complicating factor affecting assessment could be how and when the horse chooses to express pain. Minero states "Because there is no verbal means of communication between animals and humans...this could be further compounded by the horse's suppression in the expression of obvious signs of pain when in the presence of humans."

The facial actions chosen to identify pain included: stiffly backward ears; orbital tightening; tension above the eye; strained chewing muscles; mouth strained and pronounced chin; strained nostrils and flattening of the profile. A treatment-blind

observer, experienced in facial expression assessment in other species, reviewed the images to identify facial expression changes in the horses. Pain related behaviours occurred predominantly 8 hours post-op, suggesting that this is a critical time for pain evaluation.

The results of the study showed both a high degree of accuracy (73.3%) in pain assessment, and a high level of inter-observer reliability. These findings suggest that such a scale could indeed benefit those in the position of managing horses that have undergone painful procedures. One additional point of interest to note: darker coloured horses were harder to score than lighter coloured ones.

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The International Society for Equitation Science (ISES) is a not-for-profit organisation that aims to facilitate research into the training of horses to enhance horse welfare and improve the horse-rider relationship. [www.equitationsscience.com](http://www.equitationsscience.com)

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