

Comparison of three scoring systems for assessing induction quality of general anaesthesia in horses

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Induction of general anaesthesia in horses possesses a high risk because of their size and temperament. A variety of induction quality scoring systems (IQSS) are used to evaluate this perilous anaesthetic period in horses (Hubbell et al. 2024), but no attempts to elucidate their reliability have been performed.

Video-recorded anaesthetic inductions from client-owned horses were evaluated by 4 experienced observers twice, with one-month interval. Raters were asked to familiarize themselves with the IQSS before performing each evaluation. Three IQSS were used: visual analogue scale (VAS), the most utilized simple descriptive scale (SDS) (Mama et al. 1995); and a composite grading scale (CGS) proposed by the authors. To assess reliability, intra and inter-rater intraclass correlation coefficient (ICC), and their 95% confidence intervals (CI) were calculated based on a mean-rating ($k = 4$), absolute-agreement, 2-way random-effects model. Sample size was calculated based on the standard deviation from a previous study in dogs (Wolfe et al. 2022).

Randomized eight video-records were used. The higher inter-rater ICC found was for the VAS, presenting almost a very good reliability (0.74 ± 0.11). The CGS and the SDS had lower inter-rater agreement than the VAS, classified as moderate to good reliability (0.65 ± 0.22 and 0.63 ± 0.21 , respectively). Intra-rater agreement results demonstrated very good reliability for both VAS and SDS (0.82 ± 0.08 ; 0.81 ± 0.18 , respectively); and excellent reliability for the CGS (0.91 ± 0.08).

The barely used VAS and the proposed CGS are reliable and reproducible IQSS in horses, as the widely used SDS. For research purposes, the VAS is advised if multiple evaluators assess induction quality, whereas the CGS would be a better option for studies involving a single observer. Standardizing the VAS as IQSS may facilitate broader multi-centre studies as it is a simple, user-friendly and adequate for short-lasting events scale.

References

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