

## Template for abstract submission



The presenting author is an ECVSMR resident: NO  
General Session: Equine

### Comparison of two different blood gas analyzers in equine practice

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**Background and Objectives:** Blood gas analysis is an essential tool for equine veterinarians to assess blood gas and electrolyte imbalances for performance assessment in equine athletes. Many different blood gas analyzers are used but few have been validated for the use in horses. The aim of this study was to compare the results obtained from the newly marketed GEM5000 machine to the formerly validated epoc<sup>®</sup> machine.

**Material and methods:** In this prospective, comparative, non-blinded study, a total of forty-three equine blood samples, taken from 26 client-owned horses were analyzed on each of the analyzers and values for pH, pCO<sub>2</sub>, pO<sub>2</sub>, Na<sup>+</sup>, Cl<sup>-</sup>, iCa<sup>2+</sup>, K<sup>+</sup>, haematocrit, haemoglobin, base excess, saturation, and HCO<sub>3</sub><sup>-</sup> were compared via concordance analysis, Passing-Bablok regression and Bland-Altman analysis. Duplicate measurements were conducted on the GEM5000 machine and coefficients of variation were calculated to evaluate precision.

**Results:** The GEM5000 failed to achieve the required precision for the determination of pCO<sub>2</sub>, pO<sub>2</sub>, HCO<sub>3</sub><sup>-</sup> and K<sup>+</sup>. Concordance correlation analysis revealed poor correlation for Na<sup>+</sup>, Cl<sup>-</sup>, Ca<sup>2+</sup>, K<sup>+</sup>, while there was a substantial or better agreement for haematocrit and haemoglobin. Passing-Bablok revealed significant constant bias for pCO<sub>2</sub>, pO<sub>2</sub>, Cl<sup>-</sup>, and iCa<sup>2+</sup> and significant proportional bias for pCO<sub>2</sub>, iCa<sup>2+</sup> and SO<sub>2</sub>. Bland-Altman analysis revealed significant systematic bias for Na<sup>+</sup>, Cl<sup>-</sup>, iCa<sup>2+</sup>, K<sup>+</sup>, Htc, tHb, and SO<sub>2</sub>.

**Discussion/Limitations/Conclusions:** The number of samples tested is lower than the number recommended for the validation of laboratory equipment. Results of this study show that results from different machines should not be used interchangeably.

**Conflict of interest:** The authors declare no conflict of interest.

**Ethical committee:** Not applicable due to samples taken for analysis of clinical cases on the discretion of the treating veterinarian.

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