

DEVELOPMENT OF A MULTIVARIABLE PROGNOSTIC MODEL FOR CRITICALLY ILL DOGS: PRELIMINARY RESULTS. FG Ponce¹, RC Jorge¹, ETS Martins², R Duarte¹. 1. Hospital Veterinário Pompeia, São Paulo, SP, Brazil. 2. Universidade Vila Velha, Vila Velha, ES, Brazil.

The objective of this study was to determine the probability of death with different combinations of common point of care testing in a heterogeneous population of critically ill dogs and construct a prediction model from multiple variables.

Data were collected from 84 dogs admitted to a referral intensive care unit. Dogs were of various breeds. Forty-four dogs were females and 41 were males with ages varying from 2-months to 13-years old (mean age: 6 years). The most common diagnostic categories were sepsis (n = 20); metabolic diseases (n=15), multiple trauma (n = 12); neurologic diseases (n=10); and oncologic emergencies (n=7). Thirty-one dogs died or were euthanized during hospitalization (mortality: 37%).

Venous blood pH, partial pressure of CO₂ (PCO₂), electrolytes (sodium, potassium and chloride), blood urea nitrogen (BUN), blood glucose and blood lactate were measured on admission, using point-of-care instruments (iStat, Abbott Point of Care, East Windsor, NJ and Accutrend Plus, Roche, Mannheim, Germany). The values of plasma bicarbonate, base excess and anion gap were calculated automatically. All variables were included as candidate predictors for possible inclusion in the model.

A multivariable logistic regression model was developed to predict the risk of death. We selected the predictors in the model using the backward procedure. Initially, all the candidate predictors selected were included in the model. A sequence of hypothesis tests was applied to determine whether a given predictor should be removed from the model. The candidate predictors were selected into the model if $P < 0.05$ and removed from the model if $P > 0.10$.

The main prognostic predictors of death were BUN ($P = 0.09$), pH ($P = 0.06$) and PCO₂ ($P = 0.01$). Risk score from a logistic regression model to predict the risk of death (the adjusted model) can be described as: (risk score) = $38.4430 + 0.0134 \times \text{BUN} - 4.9311 \times \text{pH} - 0.0930 \times \text{PCO}_2$.

Point-of-care testing is frequently requested as part of the evaluation of critical care patients. These tests are frequently used to improve decision making and to guide therapy. These preliminary findings suggest that blood pH and BUN are the most important predictors of death in a heterogeneous population of critically ill dogs. Future steps include validation of the model in a larger sample and applying the model in samples from other facilities.

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