Sequential L-Lactate Concentration in Hospitalized Equine Neonates: A Prospective, Multicenter Study

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1. Introduction
Serial blood L-lactate concentration [LAC] changes are of prognostic value in critically ill neonatal foals but have not been prospectively evaluated in a large, multicenter study.

2. Materials and Methods
For this prospective, observational study, 13 university and private equine referral hospitals enrolled 643 foals over the 2008 foaling season. [LAC] was measured at admission ([LAC]ADMIT) and 24, 48,
72, and 120 hours after admission. [LAC] changes over time ([LAC]Δ) were calculated between sampling points.

3. Results
Nonsurvivors had significantly greater [LAC]ADMIT, [LAC] 24 hours, and [LAC] 48 hours compared with surviving foals (P < 0.001). [LAC]Δ in nonsurviving foals did not decrease over time, whereas survivors showed significant positive [LAC]Δ between [LAC]ADMIT through 24 hours and all other time periods (P < 0.001). Logistic regression analysis showed that the odds of survival decreased for each 1 mmol/L [LAC] increase at all time points for all sick foals, independent of major final diagnoses as potential confounders. Septic foals showed significantly greater [LAC] at all time points compared with nonseptic foals (P < 0.001). [LAC]Δ in septic foals was significantly more positive (suggesting better clearance) at [LAC]ADMIT through 24 hours and [LAC] 72 through 96 hours (P < 0.01), whereas in nonseptic foals, [LAC]Δ was significantly positive between [LAC]ADMIT through 24 hours compared with all other time periods (P < 0.001).

4. Discussion
L-lactate metabolism is impaired in nonsurviving and septic foals, and [LAC]Δ can be used to identify patients that are at high risk for mortality.