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# Association of Hyperlactatemia with Age, Diagnosis, and Survival in Equine Neonates

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**Abstract:**
Lactate levels are assessed in neonatal foals to gauge severity, monitor response to treatment, and formulate an accurate prognosis. Younger foals, and especially those with prematurity or neonatal encephalopathy, generate higher levels of lactate. High lactate levels at admission and levels that persist after 12–36 h of treatment are negatively associated with outcome.

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## Introduction

Lactate is reportedly a useful prognostic indicator in critically ill humans, including cases of sepsis, neonatal encephalopathy, and prematurity. This study aimed to evaluate blood lactate concentration [LAC] on admission and during treatment in neonatal foals by major diagnoses, age at admission, change in [LAC] between admission and 12–36 h ([LAC]), and outcome (survival to discharge).

## Materials and Methods

Records of foals 96 h old referred to two centers were reviewed. [LAC] at admission and 12–36 h later, diagnosis, and outcome were included. Data were analyzed using Kruskal-Wallace testing and logistic regression.

## Results

Non-survivors had significantly increased [LAC] at admission and 12–36 h than survivors. A [LAC] cut-off point of 4.85 mmol/l at admission correctly classified 80% of cases as either survivors or non-survivors. A unique finding was that blood culture–positive foals had significantly lower [LAC] than blood culture–negative foals. Prematurity and neonatal encephalopathy (NE) was the major diagnoses with the greatest change in [LAC]. Foals admitted at an earlier age had greater admission [LAC] and tended to be premature or have NE. Blood culture–positive foals were older at presentation than culture-negative foals, with [LAC] not associated with survival. Diagnosis groups had different [LAC] at admission, but these differences did not persist at 12–36

## Discussion

Admission hyperlactatemia is associated with poor outcome, as is persistent hyperlactatemia at 12–36 h. In this population, increased [LAC] was common in younger neonates with diagnoses prematurity or NE in contrast to other studies, suggesting sepsis as a major cause of neonatal hyperlactatemia.