

# Lactate in Emergent Dogs & Cats

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## In the Literature

Kohen CJ, Hopper K, Kass PH, Epstein SE. Retrospective evaluation of the prognostic utility of plasma lactate concentration, base deficit, pH, and anion gap in canine and feline emergency patients. *J Vet Emerg Crit Care (San Antonio)*. 2018;28(1):54-61.

## FROM THE PAGE ...

Plasma lactate concentration and other acid-base parameters have been associated with patient clinical outcome and provide prognostic information in human ICU and emergency patients. Hyperlactatemia has been shown to provide information on veterinary patient outcomes and is associated with increased illness severity in dogs and cats. It is unknown whether these acid-base derangements are associated with survival in dogs and cats presented to the emergency room.

This retrospective study reviewed records of 566 dogs and 185 cats presented to a university teaching hospital emergency room over a 2-year period. Data collected on each patient included plasma lactate levels, electrolytes, acid-base status, clinical diagnosis, and in-hospital mortality.

Of the study patients, 53% of dogs and 30% of cats had plasma lactate levels >2.5 mmol/L on presentation. Dogs and cats with elevated lactate levels were more likely to have a concurrent metabolic acidosis than to have normal acid-base status. The most common underlying diagnostic categories of dogs with elevated lactate levels were traumatic injury and hemorrhage, neoplasia, and GI disease. In cats, urinary tract disease, traumatic injury and hemorrhage, and GI disease were the most common diagnostic categories associated with hyperlactatemia. Dogs with lactic acidosis had the highest mortality rate (59.8%) of all dogs in the study, which was similar to the high mortality rate (49%) seen in the study cats with lactic acidosis. Cats and dogs with normal blood lactate levels had the lowest mortality rate. Plasma lactate concentration was predictive of mortality in dogs and cats.

These findings are similar to studies performed in humans and support the importance of routine evaluation of lactate and acid-base status in dogs and cats presented on emergency. Evaluation of these parameters can guide owner expectations of outcome in emergent patients and may allow clinicians to recognize patients that may be at highest risk for poor outcome.

## ... TO YOUR PATIENTS

Key pearls to put into practice:

- 1 Plasma lactate concentration and acid-base parameters in small animal patients are clinically relevant diagnostic tools and should be used in the emergency room when possible.
- 2 Lactic acidosis is indicative of more severe underlying disease and should prompt the clinician to monitor patients for decompensation.
- 3 Lactate concentrations should be measured routinely in emergent patients to provide information about hemodynamic instability and lend insight to patient outcomes.

## Suggested Reading

- Nye CJ, Musulin SE, Hanel RM, Mariani CL. Evaluation of the Lactate Plus monitor for plasma lactate concentration measurement in dogs. *J Vet Emerg Crit Care (San Antonio)*. 2017;27(1):66-70.
- Rosenstein PG, Tennent-Brown BS, Hughes D. Clinical use of plasma lactate concentration. Part 1: physiology, pathophysiology, and measurement. *J Vet Emerg Crit Care (San Antonio)*. 2018;28(2):85-105.
- Rosenstein PG, Tennent-Brown BS, Hughes D. Clinical use of plasma lactate concentration. Part 2: prognostic and diagnostic utility and the clinical management of hyperlactatemia. *J Vet Emerg Crit Care (San Antonio)*. 2018;28(2):106-121.