

# Hypophosphatemia

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## FOR MORE

Find more Differential Diagnosis lists in upcoming issues of *Clinician's Brief* and on [cliniciansbrief.com](http://cliniciansbrief.com)

- ▶ Basophilia
- ▶ Decreased Total Thyroxine
- ▶ Eosinophilia
- ▶ Epistaxis
- ▶ Hypercholesterolemia
- ▶ Hyperkalemia
- ▶ Hypoalbuminemia
- ▶ Hypocholesterolemia
- ▶ Hypoglycemia
- ▶ Hypokalemia
- ▶ Increased & Decreased Blood Urea Nitrogen
- ▶ Increased & Decreased Creatinine
- ▶ Increased Total Thyroxine
- ▶ Neutropenia
- ▶ Panting
- ▶ Regurgitation

Following are differential diagnoses, listed in order of likelihood, for patients presented with hypophosphatemia.

- ▶ Transcellular shifts
  - Diabetes mellitus, particularly diabetic ketoacidosis, following insulin therapy (common)
  - Respiratory alkalosis due to hyperventilation caused by hypoxia, stress, anxiety, salicylate toxicity, CNS disease, fever, heat stroke, sepsis, and/or gram-negative infections
  - Refeeding syndrome
- ▶ Decreased absorption
  - Vomiting/diarrhea, particularly secondary to severe malabsorptive disease
  - Anorexia
  - Vitamin D deficiency
  - Low-phosphorus diet
  - Overdose of phosphate-binding antacids
  - Steatorrhea
  - Following significant intestinal resection
- ▶ Increased renal excretion
  - Diabetes mellitus
  - Diuretics
  - Corticosteroids
  - Hyperadrenocorticism
  - Hypercalcemia of malignancy
  - Primary hyperparathyroidism
  - Renal tubular disorder (eg, Fanconi syndrome)
  - Hyperaldosteronism
  - Increased phosphatonins (eg, following renal transplantation [cats])
- Eclampsia
- Recovery from hypothermia
- Following hepatic resection
- ▶ Miscellaneous
  - Hepatic lipidosis (cats)
  - ▶ Pseudohypophosphatemia
    - Paraproteinemia

## References

- Adams LG, Hardy RM, Weiss DJ, Bartges JW. Hypophosphatemia and hemolytic anemia associated with diabetes mellitus and hepatic lipidosis in cats. *J Vet Intern Med.* 1993;7(5):266-271.
- Allen-Durrance AE. A quick reference on phosphorus. *Vet Clin North Am Small Anim Pract.* 2017;47(2):257-262.
- DiBartola SP, Willard MD. Disorders of phosphorus: hypophosphatemia and hyperphosphatemia. In: DiBartola SP, ed. *Fluid, Electrolyte, and Acid-Base Disorders.* 4th ed. St Louis, MO: Elsevier Saunders; 2012:197-201.
- Dimeski G, Hamer A, Cooper C, Johnston J, Brown NN. Pseudohypophosphataemia secondary to paraproteinemia may occur without the presence of hyperglobulinaemia. *Pathology.* 2016;48(1):102-103.
- Ferguson DC, Hoenig M. Endocrine system. In: Latimer KS, ed. *Duncan and Prasse's Veterinary Laboratory Medicine: Clinical Pathology.* 5th ed. Ames, IA: Wiley-Blackwell; 2011:295-304.
- Hardcastle MR, Dittmer KE. Fibroblast growth factor 23: a new dimension to diseases of calcium-phosphorus metabolism. *Vet Pathol.* 2015;52(5):770-84.
- Paster ER, Mehl ML, Kass PH, Gregory CR. Hypophosphatemia in cats after renal transplantation. *Vet Surg.* 2009;38(8):983-989.
- Stockham SL, Scott MA. Calcium, phosphorus, magnesium and regulatory hormones. In: Stockham SL, Scott MA. *Fundamentals of Veterinary Clinical Pathology.* 2nd ed. Ames, IA: Blackwell Publishing; 2008:615-619.
- Suarez N, Conway N, Pickett T. Panic-related hyperventilation resulting in hypophosphataemia and a high lactate. *BMJ Case Rep.* 2013;2013:bcr2013009307.