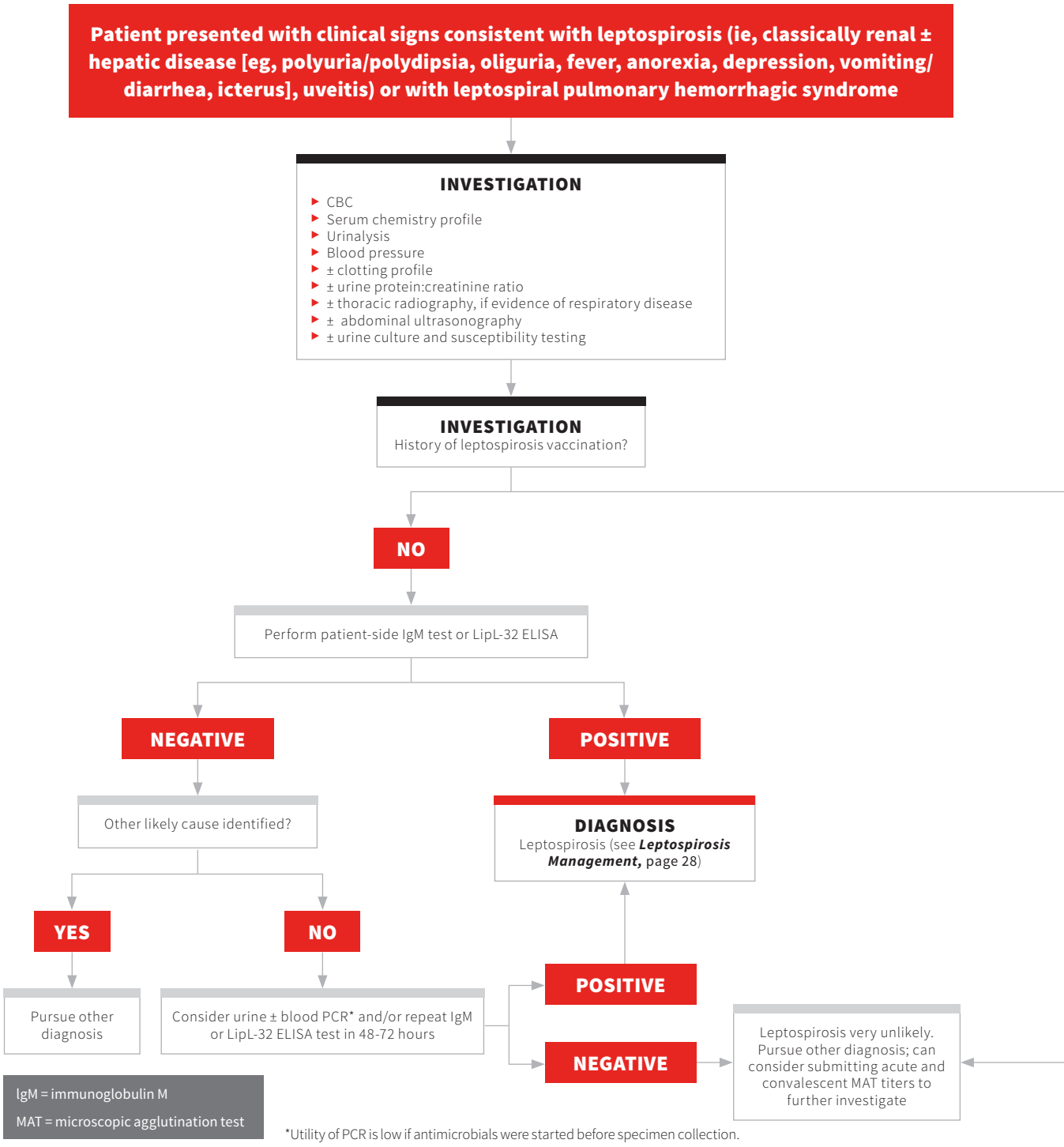
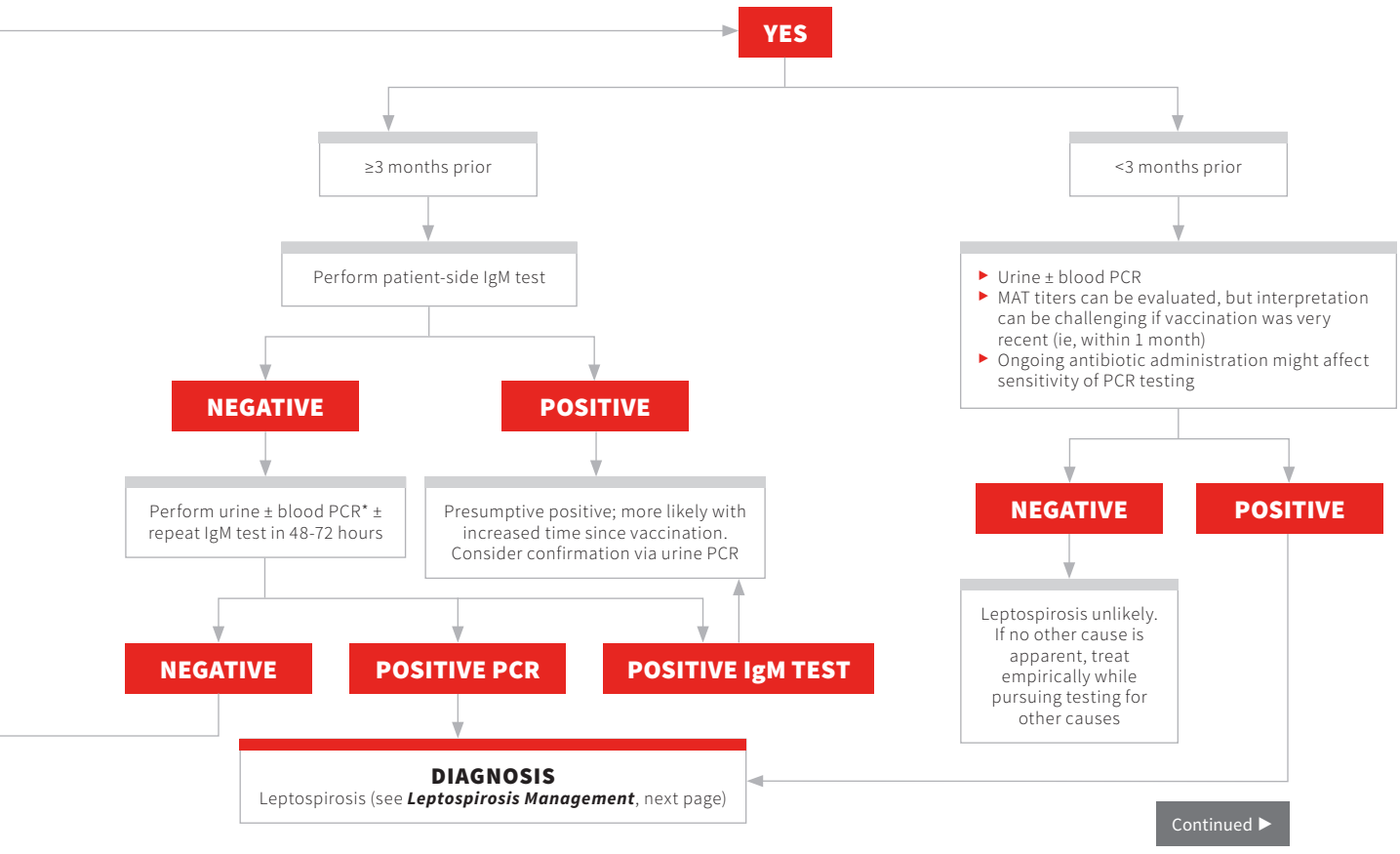
LEPTOSPIROSIS

J. Scott Weese, DVM, DVSc, DACVIM
Ontario Veterinary College
Ontario, Canada




YES
≥3 months prior
<3 months prior
Perform patient-side IgM test
▸ Urine ± blood PCR
▸ MAT titers can be evaluated, but interpretation can be challenging if vaccination was very recent (ie, within 1 month)
▸ Ongoing antibiotic administration might affect sensitivity of PCR testing
NEGATIVE
POSITIVE
Perform urine ± blood PCR* ± repeat IgM test in 48-72 hours
Presumptive positive; more likely with increased time since vaccination. Consider confirmation via urine PCR
NEGATIVE
POSITIVE
NEGATIVE
POSITIVE PCR
POSITIVE IgM TEST
Leptospirosis unlikely. If no other cause is apparent, treat empirically while pursuing testing for other causes
DIAGNOSIS
Leptospirosis (see ***Leptospirosis Management***, next page)

Continued ▶

Leptospirosis Management

Once leptospirosis diagnosis is confirmed, patients should be treated with antimicrobials and supportive care as needed.

Antimicrobials

- If the patient can tolerate oral medication: Doxycycline (5 mg/kg PO every 12 hours) for 14 days[1])
- If the patient cannot tolerate oral medication: Ampicillin (20 mg/kg IV every 6 hours), then, if possible, de-escalated to oral doxycycline (5 mg/kg PO every 12 hours) for an additional 14 days[1]

Supportive Care

- IV fluids for replacement, diuresis, acid-base balance, and electrolyte maintenance
- Antiemetics
- Nutritional support for renal or hepatic injury
- Renal replacement therapy can be considered in oliguric dogs developing volume overload, severe hyperkalemia, or severe azotemia nonresponsive to medical management.[1]
- Other care as needed based on clinical syndrome and patient response to treatment

During hospitalization, hydration status should be carefully monitored (ie, measure "ins and outs," thoracic auscultation, blood pressure), as should BUN/creatinine, acid-base/electrolytes, ± hepatic enzymes (as often as every 24 hours initially). PCV should be rechecked as often as every 24 hours initially, and CBC should be repeated as often as every 48 hours if thrombocytopenia is present and/or in severe cases. Urine specific gravity should also be rechecked every few days once fluid therapy has been discontinued, and clotting factors should be rechecked if abnormal.

Approximately 1 week after the patient is discharged, serum chemistry profile should be repeated, as should CBC if abnormalities were present at the time of discharge. Serum chemistry profile should be rechecked again in 3 to 7 days if results are still abnormal. Urine specific gravity should be monitored regularly if abnormal.

TABLE

LEPTOSPIROSIS TESTS & CONSIDERATIONS

Test	Target	Sample type	Patient-side?	Impacted by vaccination?	Impacted by antimicrobial treatment?
MAT	Antibody (IgM and IgG)	Serum	No	Yes	No
Lepto rapid test	Antibody (IgM)	Serum	Yes	Yes	No
LipL-32 Leptospira	Antibody (IgG>IgM)	Serum	Yes	Yes	No
PCR	Antigen	Urine, whole blood	No	No	Potentially

Reference

1. Sykes JE, Hartmann K, Lunn KF, Moore GE, Stoddard RA, Goldstein RE. 2010 ACVIM small animal consensus statement on leptospirosis: diagnosis, epidemiology, treatment, and prevention. *J Vet Intern Med*. 2011;25(1):1-13.

Suggested Reading

Barr SC, McDonough PL, Scipioni-Ball RL, Starr JK. Serologic responses of dogs given a commercial vaccine against *Leptospira interrogans* serovar pomona and *Leptospira kirschneri* serovar grippotyphosa. *Am J Vet Res*. 2005;66(10):1780-1784.

Curtis KM, Foster PC, Smith PS, et al. Performance of a recombinant LipL32 based rapid in-clinic ELISA (SNAP Lepto) for the detection of antibodies against Leptospira in dogs. *Intern J Appl Res Vet Med*. 2015;13(3):182-189.

Lizer J, Grahlmann M, Hapke H, Velineni S, Lin D, Kohn B. Evaluation of a rapid IgM detection test for diagnosis of acute leptospirosis in dogs. *Vet Rec*. 2017;180(21):517.

Lizer J, Velineni S, Weber A, Krecic M, Meeus P. Evaluation of 3 serological tests for early detection of Leptospira-specific antibodies in experimentally infected dogs. *J Vet Intern Med*. 2018;32(1):201-207.

Midence JN, Leutenegger CM, Chandler AM, Goldstein RE. Effects of recent Leptospira vaccination on whole blood real-time PCR testing in healthy client-owned dogs. *J Vet Intern Med*. 2012;26(1):149-152.

Schuller S, Francey T, Hartmann K, et al. European consensus statement on leptospirosis in dogs and cats. *J Small Anim Pract*. 2015;56(3):159-179.

IgG = immunoglobulin G

IgM = immunoglobulin M

MAT = microscopic agglutination test