

Canine Leptospirosis

PATIENT MANAGEMENT AT THE VTH

Early identification and prompt, effective communication is critical for limiting the spread of canine leptospirosis in the VTH. All personnel should be aware of the status of high-risk patients and potentially contaminated materials or environments. Infected or colonized patients should be isolated and restricted in their movement.

Please contact VTH Infection Control Personnel if you have any questions about these policies and procedures

Quick Facts

- Refer to Leptospirosis in sections V and VII of the Infection Control and Biosecurity SOP for more comprehensive information.
- Use "Special Attention Required" sticky notes to facilitate effective communication about lepto cases within the VTH.
- Renal failure is a common sign of leptospirosis. Leptospirosis should also be considered in patients with hepatic failure, uveitis, pulmonary hemorrhage, acute febrile illness, or abortion.
- Depending on dose, strain and host response, the incubation period is 1-7 days. Shedding in urine typically begins 7-10 days after infection and generally ceases within 2-3 days of initiating appropriate antimicrobial therapy.
- Immunity to leptospirosis is serovar specific, and predominant serovars vary geographically. Failure to seroconvert does not preclude leptospirosis as a diagnosis.
- Transmission generally occurs through contact with urine of infected animals or contact with urine-contaminated hair, water, soil, food, or bedding. It may also be transmitted through inoculation into wounds, ingestion of infected tissues, venereal or transplacental transfer.
- Decreased platelet counts have been reported in 58% of infected dogs, but it is generally not accompanied by hemolysis.
- Clinical disease is rare in cats, horses, and cattle, but leptospires have been isolated from them.
- Humans can be a vector for transmission by failing to wash their hands before and after contact with infected patients.
- Leptospire are easily deactivated by soaps and common disinfectants and usually have low environmental persistence on hospital surfaces. However, they may persist in water or urine-soaked soil for weeks.

Identification of High-Risk Patients

Leptospirosis is most prevalent in regions with high annual rainfall and warm temperatures. In the US, incidence peaks in late autumn. Cattle have a high risk for asymptomatic infection accompanied by shedding of leptospires in urine. As with humans, dogs that have close contact with cattle are at increased risk for leptospirosis.

Clinicians should suspect leptospirosis in dogs if there is...

- Renal or hepatic failure, uveitis, pulmonary hemorrhage, acute febrile illness, or abortion.
- History of close contact with cattle or other dogs known to have leptospirosis.

If a patient is suspected of having leptospirosis, special attention should be paid to containing their urine, limiting contact through barrier nursing precautions, and restricting their movement in the hospital whenever possible. If containing urine is problematic, the patient must be isolated in the early stages of treatment when shedding is most likely. However, because leptospires are not easily transmitted between dogs and the risk of shedding drops dramatically after initiating appropriate antimicrobial therapy, patients suspected of having leptospirosis do not have a strict need to be isolated.

Procedures, Isolation, Barrier Precautions, and Patient Movement

- Hospitalized leptospirosis patients should be housed in low-traffic areas and movement should be restricted in the hospital.
- Regardless of antimicrobial therapy, cases must be managed with full barrier precautions and contact restriction. This should include use of face shields when aerosolization of urine is possible.
- Hand washing or use of hand sanitizers must be enforced after any contact with affected patients.
- Because leptospirosis is primarily transmitted through contact with infected urine, suspected cases should be allowed to void in the isolation unit, or if needed, they should be transported, via gurney, to a remote area of grass north of the fence dividing the parking area (See the "Areas For Exercising VTH Canine Patients" map in section IV of the Biosecurity SOP).
- Waste (e.g. urine collection materials, bandages) should be double bagged and disposed of normally; it is not necessary to use special bags or autoclave these materials.
- Use "Special Attention Required" sticky notes to label contaminated equipment before leaving at Central Supply for cleaning.
- Exam rooms should be labeled "Special Attention Required" using sticky notes, and clinicians must notify Animal Care and other cleaning personnel of areas that may be contaminated with leptospirosis. Appropriate disinfection of all contaminated equipment and surfaces is critical.

*Immune compromised people should always take greater precautions, as they are susceptible to infections that the general population is not.

Communication Within the VTH And with Clients

- Whenever patients are identified as shedding leptospires, or when they are considered to be high-risk suspects, an email notification must be sent to the “Alert” listserv: VTH-Contagious-Dz-Alert@colostate.edu
- The veterinarian responsible for the patient’s care should personally communicate the situation to the supervising clinician, supervising nurse, head of Animal Care, and any students contacting the case regarding patient status, special cleaning requirements, and transmission risk.
- Use “Special Attention Required” sticky notes to facilitate effective communication to other VTH personnel.
- VTH policy requires client notification if an infection with zoonotic potential has been identified in their pet.
- Clients should be made aware of appropriate at-home measures to reduce the risk of transmission within their household.

Diagnostic Testing of Suspected Cases

- **Appropriate diagnostic testing is required** for any hospitalized dog with unexplained azotemia or hepatic inflammation.
- PCR should be conducted on appropriate specimens (blood during the first week of illness, and urine thereafter). It should be remembered that antimicrobial therapy can decrease the likelihood of detecting leptospires. Therefore, negative PCR results do not necessarily rule-out infection.
- Samples should be identified on laboratory submission forms as originating from a leptospirosis suspect.
- Remember that leptospires are not visible in urine sediment using light microscopy.
- Serological testing has significant limitations and is not the preferred method of diagnosis.
 - Results are often negative in the first week of illness. Therefore, if used, serological testing of acute and convalescent samples obtained at least 7-14 days apart is recommended.
 - A 4-fold increase in titer of convalescent samples supports recent infection.
 - Serological responses can be blunted by antimicrobial therapy.
 - MAT (microscopic agglutination test) is not recommended to identify the infecting serovar.

Medical Management Of Confirmed Leptospirosis Cases

The ACVIM consensus statement recommends the following for management of leptospirosis cases: (available at <http://doi.wiley.com/10.1111/j.1939-1676.2010.0654.x>)

- Antimicrobial treatment should be initiated immediately; do not delay treatment while waiting for laboratory confirmation of infection.
- Doxycycline is the preferred antimicrobial treatment (5mg/kg PO or IV q12h for 2 weeks).
 - If vomiting or other adverse reactions preclude doxycycline administration, treatment with ampicillin, (20mg/kg IV q6h, with dose reduction for azotemic dogs) or penicillin G (25,000–40,000U/kg IV q12h) is recommended.
 - Treatment with 1st generation cephalosporins is not recommended, nor is concurrent fluoroquinolone treatment.
- Treatment with IV fluids is typically indicated, but dogs should be carefully monitored for signs of overhydration.
- Normal renal function is usually regained 2-4 weeks after initiating dialysis.
- Dogs with LPHS (leptospirosis pulmonary hemorrhage syndrome) may require oxygen therapy and, if severe, mechanical ventilation.
- Patients should have a urinary catheter placed if they have signs of renal failure or if urine containment is problematic.

Cleaning Precautions

- Caution must be used to prevent dissemination of urine during the cleaning process.
- Do not use high-pressure washing in areas contaminated with leptospirosis as it may result in aerosolization of the organism.
- Protect eyes, mouth, and skin when cleaning cages or handling soiled bedding by using barrier gowns, gloves, and face shields.
- Leptospires are easily deactivated by normal cleaning and disinfection procedures.

Special Attention Required

Frequency Seen at VTH: Common

Transmission Route: Contact

Risk of Infection in People: Low

Consequences to People: Low to High

Environmental Persistence: Low