CAMELID DIAGNOSTIC PLANS/PANELS

Post Office: P.O. Box 5786
607-253-3900 (telephone)
607-253-3935 (telephone, shipping)
607-253-3943 (fax)
diagcenter@cornell.edu
http://ahdc.vet.cornell.edu/

The following diagnostic plans have been developed primarily as an educational tool to assist the veterinarian in designing a complete, although not exhaustive, diagnostic strategy. To encourage veterinarians to select only the tests that are deemed clinically appropriate in each situation, the price of the diagnostic plan is not discounted from the sum of the individual test costs. Superscript numbers match the individual tests to the sample needed. For the test groupings labeled as panels, there may be a discounted price versus the costs of the individual tests. Diagnostic plans and panels can be requested by writing the complete name as the test request. If appropriate samples are included all tests will be performed.

### Diagnostic Plans

**Camelid Abortion Fetal Tissue Diagnostic Plan**

- (3) **Aerobic bacterial cultures**¹: Listeria included (1 sensitivity included); **Bovine Virus Diarrhea Virus (BVDV)** FA²; **Bovine Virus Diarrhea Virus (BVDV) SN, Type 1³** and **Type 2⁴**; **Campylobacter fetus (Vibrio) culture⁶**; (2) **Campylobacter fetus (Vibrio) FAs⁶**; **Chlamydia FA⁷**; **Chlamydia PCR⁸**; **Equine Herpesvirus-1 (Rhinopneumonitis) FA⁹**; **Histopathology**¹⁰; **Field Necropsy Surcharge**¹⁰; (2) **Leptospira PCRs¹¹**; **Toxoplasma FA¹²**; **Toxoplasma gondii IgG ELISA¹³**; **Virus isolation¹⁴**

May also want to consider adding **Selenium** ($55) to fetal liver especially if stillbirths and/or neonatal deaths are involved.

**Prices**

$603.25 per fetus

Testing may qualify for **N.Y State contract case subsidy.**

**Samples Needed**

**Fresh tissue**¹,²,⁵,⁶,⁷,⁸,⁹,¹¹,¹²,¹³,¹⁴: lung, placenta including cotyledons, abomasal contents, kidney, liver, heart, adrenal, skin, **heart blood**³,⁴,¹³ in sterile red top tube AND

**Formalin fixed tissue**¹⁰: placenta, liver, lung, brain, adrenal, heart, thymus, small intestine, kidney, fetal skin. **SHIP FRESH TISSUE CHILLED AND PROTECT FIXED TISSUE FROM FREEZING.**

Kit is available. See **Ruminant Abortion Kit** for more complete instructions. If full necropsy desired, see **Necropsy Testing.**

**Camelid Abortion Serology Panel + Selenium**

- **Bovine Virus Diarrhea Virus (BVDV) SN, Type 1¹ and Type 2²**; **Brucella card agglutination³**; **Equine Herpesvirus-1 (Rhinopneumonitis) SN⁴**; **Equine Rhinovirus-1 (ER-A) (Equine Rhinitis A Virus) SN⁵**; **Leptospira MAT, 5 standard serovars⁶**; **Selenium, whole blood⁷**; **Toxoplasma gondii IgG ELISA⁸**

**Prices**

$122.50 single

$245. paired (1 selenium)

Testing may qualify for **N.Y State contract case subsidy.**

**Maternal serum**¹,²,³,⁴,⁵,⁶,⁸ (separated) and maternal EDTA whole blood⁷ (LTT). **SHIP CHILLED.** When acute and convalescent samples are/will be collected, for most serology assays they should always be tested in parallel, and paired results interpreted. If acute samples are submitted alone please indicated if all tests should be performed. If second, convalescent samples are later submitted, tests on both samples will be run in parallel and fees for both samples will be charged. To avoid testing acute samples twice, hold and submit with convalescent samples. If convalescent samples will not be collected, or when infectious abortion is strongly suspected due to history, immediate testing of acute sample may be warranted.

**Diagnostic Plans/panels can be ordered by writing the complete plan/panel name. The tests are also available individually.**

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* indicates test performed at a referral laboratory
### Diagnostic Plans/Panels

**Camelid Diarrhea Diagnostic Plan**

**Tests Performed**

- Camelid Enteric Coronavirus PCR\(^1\); Fecal quantitative\(^2\); Johne’s AGID\(^3\); Salmonella culture\(^4\) (no sensitivity included)
- Johne’s Culture, Non-Bovine ($40.25) on fresh feces may also be warranted. The lag time for culture is 12-16 weeks although positive samples may be shorter.
- In neonatal crias an Aerobic bacterial culture ($35) and a Rotavirus Latex Antigen Detection, Group A ($25) on feces should also be considered.

**Prices**

- $87.75

**Samples Needed**

- Fresh Feces\(^1,2,4\) in leak-proof container (20 g) and serum (separated)\(^3\). **One fecal sample**\(^4\) (1 g, fill to line on container but do not overfill) can be put in ParaPak® transport media to assist with Salmonella recovery. ParaPak® transport media is available. **SHIP CHILLED, EXCEPT FOR PARAPAK® WHICH SHOULD BE KEPT AT ROOM TEMPERATURE.**

**Camelid Liver Panel (Large Animal Liver Panel + NEFA)**

**Tests Performed**

- AST; SDH; GGT; GLDH; Non-esterified Fatty Acid (NEFA); Total/Direct/Indirect Bilirubin; Total Protein; Albumin; Globulin; A/G Ratio; CK; Triglycerides

**Prices**

- $37.50

**Samples Needed**

- Serum (separated) or heparinized plasma (separated from a green top tube). **SHIP CHILLED**

**Camelid Neurologic Diagnostic Plan**

**Tests Performed**

- Aerobic bacterial culture\(^1\); Histopathology\(^2\); Field Necropsy Surcharge\(^2\); Lead, blood or Lead, tissue\(^3\); Listeria culture\(^4\); Virus Isolation\(^5\); West Nile Virus (WNV) PCR\(^6\)
- May also want to consider Cerebrospinal Fluid Cytology ($54) which requires CSF in EDTA tube (LTT) and (2) air dried slides of CSF. Protect slides from formalin exposure.
- If whole head is submitted a rabies brain extraction fee will be applied ($50). Please submit completed NYS rabies specimen history form and write out clear instructions on what additional diagnostic tests should be performed.

**Prices**

- $320.75

**Samples Needed**

- CSF\(^1,5,6\) sample taken using sterile technique and placed in sterile red top tube +/- (1) swab\(^1\) inoculated with CSF, OR (1) swab\(^1\) of meninges prior to contamination and placed in aerobic transport media (Amies with charcoal), fresh brain (cerebrum, cerebellum and brainstem)\(^4,5,6\) placed in sterile container, EDTA or Heparin whole blood\(^3\) (LTT or GTT) or fresh liver\(^3\) in sterile container, full set of fixed tissues\(^2\) placed in formalin, including multiple sections of brain and spinal cord. **SHIP CHILLED AND PROTECT FIXED TISSUE FROM FREEZING. PLEASE INDICATE IF RABIES TESTING IS PENDING.** See Tissues for Rabies Diagnosis for photos of brain samples needed for rabies testing.
### Diagnostic Plans/Panels

**Camelid Respiratory (Acute) Diagnostic Plan**

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<th>TESTS PERFORMED</th>
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<tr>
<td><strong>Aerobic bacterial culture</strong>&lt;sup&gt;1&lt;/sup&gt; (1 sensitivity included); <strong>Bovine Respiratory Syncytial Virus (BRSV) FA</strong>&lt;sup&gt;2&lt;/sup&gt;; <strong>Chlamydophila PCR</strong>&lt;sup&gt;3&lt;/sup&gt;; <strong>Coronavirus FA</strong>&lt;sup&gt;4&lt;/sup&gt;; <strong>Cytology</strong>&lt;sup&gt;5&lt;/sup&gt;; <strong>Fibrinogen (heat-precipitated)</strong>&lt;sup&gt;6&lt;/sup&gt;; <strong>Hemogram, routine (CBC)</strong>&lt;sup&gt;7&lt;/sup&gt;; <strong>Histopathology</strong>&lt;sup&gt;8&lt;/sup&gt;; <strong>Field Necropsy Surcharge</strong>&lt;sup&gt;9&lt;/sup&gt;; <strong>Mycoplasma Culture</strong>&lt;sup&gt;9&lt;/sup&gt;; <strong>Virus Isolation</strong>&lt;sup&gt;10&lt;/sup&gt;</td>
<td><strong>$321.25</strong> (ante mortem samples)</td>
<td>Ante mortem samples: <strong>transtracheal wash</strong> (TTW)(preferred sample) or bronchial alveolar lavage (BAL) fluid in <strong>RTT</strong>&lt;sup&gt;1,2,3,4,9,10&lt;/sup&gt; (alternatively can use viral transport media), and in EDTA tube&lt;sup&gt;5&lt;/sup&gt;(LTT), (2) <strong>air dried slides</strong>&lt;sup&gt;5&lt;/sup&gt; of fluid, (1) <strong>swab inoculated with sample</strong>&lt;sup&gt;1,9&lt;/sup&gt; placed in aerobic transport media (Amies w/o charcoal), <strong>EDTA whole blood</strong>&lt;sup&gt;6,7&lt;/sup&gt; (LTT), and (2) <strong>air dried blood smears</strong>&lt;sup&gt;7&lt;/sup&gt;. <strong>SHIP CHILLED EXCEPT FOR SLIDES WHICH SHOULD BE KEPT AT ROOM TEMPERATURE.</strong></td>
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Testing for evidence of lungworms, **quantitative fecal** ($25) may be warranted depending on season. Also **selenium** on an **EDTA whole blood** ($28) sample or liver ($55) and **vitamin E** ($30) on a **serum** sample (separated) may be appropriate in some situations. Limited serology testing is available but paired acute and convalescent **serum** samples for **BRSV SN** ($29 paired) may be warranted in acute disease episodes.

**Coagulation Panel, Large Animal**

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<tr>
<td><strong>aPTT; PT; Fibrinogen (Clauss method)</strong></td>
<td><strong>$40.50</strong></td>
<td>2 ml <strong>separated citrate plasma</strong> in plastic or siliconized glass tube (blue top and then separated and transferred). <strong>SHIP CHILLED.</strong></td>
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<td>Dermatology Diagnostic Plans</td>
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<tr>
<td>Deep lesion</td>
<td>Aerobic bacterial culture⁴ (1 sensitivity included); Biopsy for parasite exam²;</td>
<td>Deep lesion: $208.00</td>
<td>Deep lesion: (2) fresh skin biopsies¹,²,³,⁴ in plain RTT with 0.5 ml sterile saline to keep moist (not wet) +/- swab¹,³ from deep in tissue placed in aerobic transport media (Amies with charcoal), multiple formalin fixed skin biopsies⁵. SHIP CHILLED AND PROTECT FIXED TISSUE FROM FREEZING.</td>
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<tr>
<td></td>
<td>Fungal culture³; Gram stain⁴; Histopathology (biopsy)⁵</td>
<td>Testing may qualify for N.Y State contract case subsidy.</td>
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<tr>
<td>Superficial lesion</td>
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<tr>
<td></td>
<td>Fungal culture³; Gram stain⁴; Histopathology (biopsy)⁵; Skin scraping for ectoparasite identification⁶; Cytology⁷</td>
<td>Superficial lesion: $188.00</td>
<td>Superficial lesion: (1) hair and skin scraping³,⁴ for fungal culture and gram stain sent in a sealable paper envelope, (1) skin scraping⁶ for ectoparasite identification in an escape proof, non-porous container, (2) impression smears/skin scrapings/fluid aspirates⁷ for cytology placed on glass slides and air dried, and multiple formalin fixed skin biopsies⁵. No aerobic culture is included in the superficial plan. SHIP AT ROOM TEMPERATURE AND PROTECT FROM TEMPERATURE EXTREMES.</td>
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<tr>
<td><strong>Fever of Unknown Origin Diagnostic Plan</strong></td>
<td>(3) <strong>Blood cultures, aerobic/fungal</strong>&lt;sup&gt;1&lt;/sup&gt; (1 sensitivity included); (3) <strong>Blood cultures, anaerobic</strong>&lt;sup&gt;2&lt;/sup&gt;; <strong>Fibrinogen (heat-precipitated)</strong>&lt;sup&gt;3&lt;/sup&gt;; <strong>Hemogram, routine (CBC)</strong>&lt;sup&gt;4&lt;/sup&gt; (examination for blood parasites included); (2) <strong>Virus isolations</strong>&lt;sup&gt;5&lt;/sup&gt; (nasal, whole blood)</td>
<td>$301.50</td>
<td>(3) Inoculated <strong>aerobic/fungal blood culture bottles</strong>&lt;sup&gt;1&lt;/sup&gt;, (3) inoculated <strong>anaerobic blood culture bottles</strong>&lt;sup&gt;2&lt;/sup&gt;, nasal swab&lt;sup&gt;5&lt;/sup&gt; in 0.5 ml saline to keep moist (not wet), (2) tubes <strong>EDTA whole blood</strong>&lt;sup&gt;3,4,5&lt;/sup&gt; (LTT), and (2) <strong>air dried blood smears</strong>&lt;sup&gt;4&lt;/sup&gt;. <strong>SHIP CHILLED</strong> FOR SLIDES AND BLOOD CULTURE BOTTLES, WHICH ARE SHIPPED AT ROOM TEMPERATURE. See Blood Culture Technique for more information. To order blood culture bottles go to shipping services or call 607.253.3935. It may be helpful to collect and bank a serum sample for possible acute and convalescent serology. This diagnostic plan is designed to detect a broad spectrum of systemic bacterial, viral, and some blood parasite causes of acute fever of unknown origin, as well as certain inflammatory changes which may assist in determining the underlying problems. Viral causes of illness are best detected acutely and most are unlikely to be detected in a patient with a chronic fever of unknown origin. This plan is intended to be used as an adjunct to targeted, disease-specific testing appropriate to the species, clinical history and geographic location or conditions. See Small Animal Internal Medicine, 5th Edition, 2014, Nelson RW and Couto CG; Chapter 88: Fever of Unknown Origin, pages 1279-1282 for other ideas of testing.</td>
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<tr>
<td><strong>Large Animal Basic Workup</strong></td>
<td><strong>Fibrinogen (heat-precipitated)</strong>&lt;sup&gt;1&lt;/sup&gt;; <strong>Hemogram, routine (CBC)</strong>&lt;sup&gt;2&lt;/sup&gt;; <strong>Large animal chemistry panel</strong>&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$100.50</td>
<td><strong>EDTA whole blood</strong>&lt;sup&gt;1,2&lt;/sup&gt; (LTT), (2) <strong>air dried blood smears</strong>&lt;sup&gt;4&lt;/sup&gt;, and <strong>serum</strong>&lt;sup&gt;3&lt;/sup&gt; (separated) or <strong>heparinized plasma</strong>&lt;sup&gt;3&lt;/sup&gt; (separated from a green top tube). <strong>SHIP CHILLED.</strong></td>
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<tr>
<td><strong>Large Animal Renal Panel</strong></td>
<td><strong>Na</strong>; <strong>K</strong>; <strong>Cl</strong>; <strong>Bicarb</strong>; <strong>Anion gap</strong>; <strong>Urea</strong>; <strong>Creatinine</strong>; <strong>Albumin</strong>; <strong>Ca</strong>; <strong>P</strong></td>
<td>$26.00</td>
<td><strong>Serum</strong> (separated) or <strong>heparinized plasma</strong> (separated from a green top tube). <strong>SHIP CHILLED</strong></td>
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<td>Small Ruminant/Camelid Pinkeye Diagnostic Plan</td>
<td>Aerobic bacterial culture¹; Chlamydophila PCR²; Mycoplasma culture³</td>
<td>$101.75</td>
<td>Conjunctival swab¹,² in aerobic transport media (Amies w/out charcoal), conjunctival swab² in sterile tube with 0.5 ml saline to keep moist (not wet). SHIP CHILLED.</td>
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LTT – Lavender Top Tube
RTT – Red Top Tube

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