The Most common

Equine Diagnostic Plans

Committee

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Executive Chief of the Egyptian Health Council: Prof. Dr Mohamed Mustafa Lotief.

Head of the Committee: Prof. Dr Ahmed M Byomi

The Rapporteur of the Committee: Prof. Dr Mohamed Mohamedy Ghanem.

Scientific Group Members: Prof. Dr Nabil Abd Elgaber, Prof. Dr Ashraf Aldesoky Shamaa, Prof. Dr Amany Abbass, Prof. Dr Dalia Mansour, Dr Essam Sobhy, Dr Mohamed Elsharkawi.

Editor: Dr Mohamed Elsharkawi, Prof Mohamed Ghanem.

Scope

This guideline outlines the most common methods with its precaution appropriate for the diagnoses of the most equine diseases that are most infectious, non-infectious and zoonotic diseases. For this manual to become an effective document, it is important that the proposed strategies are incorporated into routine protocols and staff training.

The Target audience

The guideline is intended for all veterinarians who are responsible for dealing with equine population as well as whose responsible for veterinary clinics and equine farms owners.

Introduction

Diagnostic tests are essential tools for confirming the health status of animals and identifying pathogens. They enable the early detection, management and control of animal diseases including zoonosis, it is important to take into account several basic aspects of the sampling for the laboratory analysis in order to avoid mistakes in this stage which could lead to false conclusions drawn from the interpretation of results:

1. Choosing the right material when carrying out the sampling.

2. Two samples collected in clean/sterile conditions depending on the case.

3. The samples taken should be transported to the laboratory in ice box for the detection of the antigen .

4. The serum samples must be collected for the detection of antibodies (serology).

5. it is very important to label the samples correctly.

A detailed case report should be included with the samples

1. Owner's name – farm name

2. Horse ID.

3. Owner complain and clinical signs

4. Gross findings and lesions (including size and anatomic location).

5. previous treatment, including response to treatment (if any) results of relevant diagnostic testing, such as CBC, serum biochemical analysis, cytologic and histologic evaluation, and imaging studies

6. Previous vaccination program.

7. Feeding program.

The most common equine diagnostic plans:

1. Equine Basic Workup

2. Equine Pre-purchase Exam Diagnostic Plan
3. Equine Liver
4. Large Animal Renal
5. Dermatology Diagnostic Plan
6. Equine Abortion Fetal Tissue Diagnostic Plan
7. Equine Abortion Serology + Selenium
8. Equine Chronic Ill Thrift/Weight Loss Plan
9. Equine Cryptorchid
10. Equine Diarrhea, Adult (Acute) Diagnostic Plan
11. Equine Diarrhea, Adult (Chronic) Diagnostic Plan
12. Equine Diarrhea/Septicemia Foal Acute Diagnostic Plan
13. Equine Fever of Unknown Origin Diagnostic Plan
14. Equine Respiratory PCR
15. Equine Foal Joint Ill Diagnostic Plan
16. Equine Myopathy Plan
17. Equine Respiratory, Adult Diagnostic Plan
18. Equine Respiratory, Foal Diagnostic Plan
19. Equine Metabolic Syndrome Diagnostic Plan

1. Equine Basic Workup

Tests Performed	Test Code	Samples Needed

Fecal Floatation	FLOAT	Fresh feces from animals 3 days or older
Hemogram, Large Animal	LA CBC	(2) air dried blood smears 1ml EDTA whole blood (lavender top tube)
Large Animal Chemistry	LA P	Heparinized plasma (separated from a green top tube) or Serum (separated)
Serum Amyloid A	SAA	1ml serum

- Ship chilled except for slides which should remain at room temperature.

2. Equine Pre-purchase Exam Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Equine Arteritis Virus (EAV) SN If stallion, add EVASN	EVASN	- Serum
Equine Infectious Anemia (EIA) Virus c-ELISA	EIAEL	
Fecal Floatation	FLOAT	- Fresh feces in leak-proof container.
Hemogram, Large Animal	LA CBC	- (2) Air dried blood smears. - EDTA whole blood (lavender top tube).
Large Animal Chemistry	LA P	- Heparinized plasma (separated from a green top tube). - Serum (separated).
Equine Drug Screen Level 1 or Equine Drug Screen Level 2	EQDRUG1 EQDRUG2	- 8ml Heparinized whole blood (green top tube). - 4ml of heparinized plasma separated and placed in plain red top tube.

- Ship chilled. Slides should be kept at room temperature.
- If stallion, add Equine Arteritis Virus (EAV) SN on serum. If stallion is known EVA positive, may want to consider Equine Arteritis Virus (EAV) semen isolation (OIE) on semen.

3. Equine Liver

Tests Performed	Test Code	Samples Needed
A/G Ratio		- Heparinized plasma (separated from a green top tube) - Serum (separated)
Albumin	ALB	
Aspartate Aminotransferase	AST	
Bilirubin (total, direct, indirect)	BILIP	
Creatine kinase	CK	
Gamma Glutamyl Transferase	GGT	
Globulin		
Glutamate Dehydrogenase, blood	GLDH	
Sorbitol Dehydrogenase, blood	SDH	
Total Protein with Albumin and Globulins		
Triglycerides	TRIG	

- Ship chilled.

Interpretations

Bile acid results in most healthy horses are < 11 umol/L. Patients with values higher than this could have hepatobiliary dysfunction or portosystemic shunting, but results are not specific for the type of underlying disease. In horses, slightly increased concentrations (up to 20 umol/L) can result from decreased feed intake lasting several days or longer. Note that bile acid concentrations cannot be accurately interpreted in a patient that has an increased direct (conjugated) bilirubin, since bile acids do not give any indication of hepatic function or portosystemic shunting in the presence of cholestasis.

4. Equine Renal

Tests Performed	Test Code	Samples Needed
Albumin	ALB	- 1ml Serum (separated). - heparinized plasma.
Anion Gap		
Calcium	CA	
Chloride	CL	
Creatinine	CREAT	
Phosphate (Phosphorus)	P	
Potassium	K	
Sodium	NA	
Urea Nitrogen	BUN	

- Ship chilled

5. Dermatology Diagnostic Plan

- **Deep lesion**

Tests Performed	Test Code	Samples Needed
Aerobic bacterial culture	AER	- (2) Fresh skin biopsies in plain red top tube with 0.5ml sterile saline to keep moist (not wet). - +/- Swab from deep in tissue placed in aerobic transport media (Amies with charcoal).
Fungal Culture	FUNGCM	
Fungal KOH Fluorescent Stain	FUNGKOH	- Nails, skin scrapings or 10-12 hairs from border lesion - Fresh tissue or bodily fluids (systemic fungi/yeast) - Prepared slide
Gram Stain	GRAM	- (2) Fresh skin biopsies in plain red top tube with 0.5ml sterile saline to keep moist (not wet).
Histopathology (biopsy)	HISTO	- Multiple formalin fixed skin biopsies.

- **Superficial lesion**

Tests Performed	Test Code	Samples Needed
Fungal Culture	FUNGCM	- (1) Hair and skin scraping for fungal culture and gram stain sent in a sealable paper envelope.
Gram Stain	GRAM	
Fungal KOH Fluorescent Stain	FUNGKOH	- Skin scrapings or 10-12 hairs from border lesion. - Fresh tissue or bodily fluids (systemic fungi/yeast) Prepared slide.
Histopathology (biopsy)	HISTO	- Multiple formalin fixed skin biopsies.
Skin Scraping	SSE	- (1) Skin scraping for ectoparasite identification in an escape proof, nonporous container.

- Deep lesion samples: Ship chilled and protects fixed tissue from freezing.
- Superficial lesion samples: Ship at room temperature and protect from temperature extremes.
- Protect slides from formalin exposure.

6. Equine Abortion Fetal Tissue Diagnostic Plan

Tests Performed	Test Code	Samples Needed

(3) Aerobic Bacterial Culture	AER	- Submit 3 fresh tissue samples: placenta, lung, and stomach contents - labelled and individually bagged; for individual aerobic culture
Equine Arteritis Virus (EAV) FA	EVAFA	- Fresh tissue: placenta, liver, lung, kidney - labelled and individually bagged
Equine Herpesvirus PCR	EHVPNL	- Fresh tissue: lung (preferred), placenta - use only if lung not available
Histopathology	HISTO	- Formalin-fixed tissue: placenta, liver, lung, brain, adrenal, heart, thymus, small intestine, kidney, and fetal skin
(2) Leptospira PCR	LEPTPCR	- Submit 2 fresh tissue samples: placenta and fetal kidney preferred; stomach contents acceptable

- Collect fetal heart blood, pleural fluid or abdominal fluid and place in red top tube for possible antibody serology testing.
- Ship chilled and protects fixed tissue from freezing.
- Placenta samples will be cultured as one of the 3 aerobic cultures.

7. Equine Abortion Serology + Selenium

Tests Performed	Test Code	Samples Needed
Equine Arteritis Virus (EAV) SN	EVASN	- 1ml maternal serum (separated)
EquineHerpesvirus(Rhinopneumonitis) SN	EHV1SN	
Equine Herpesvirus-4 (EHV-4) SN	EHV4SN	
Equine Influenza Virus (EIV) HAI	EIVHAI	
Leptospira MAT, 5 standard serovars	LEPTO	
Selenium, whole blood	SEL	- Maternal EDTA whole blood (lavender top tube) - Maternal heparin whole blood (lavender top tube)

- 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.

8. Equine Chronic Ill Thrift/Weight Loss Plan

Tests Performed	Test Code	Samples Needed

ACTH Baseline	ACTHE	- 3ml EDTA plasma separated from cells and frozen within 4 hours.
Insulin Baseline	INSE	
ACTH Post TRH	ACTHPOSTTRH1	
ACTH Pre TRH	ACTHPRETRH	
Equine Infectious Anemia (EIA) Virus c-ELISA	EIAEL	- 1ml serum.
Fecal Floatation	FLOAT	- Fresh feces.
Hemogram, Large Animal	LA CBC	- (2) unstained, unfixed, air-dried blood smears
Large Animal Chemistry	LA P	- Heparinized plasma (separated from a green top tube). - Serum (separated).
Peritoneal Fluid Cytology	PTFE	- 1ml peritoneal fluid in EDTA (lavender top tube); red top tube if culture anticipated plus 2-3 unstained smears.
Sand Recovery Analysis	SAND	- Feces (8-10 fecal balls).
Selenium, whole blood.	SEL	- EDTA whole blood (lavender top tube). - Heparin whole blood (green top tube).
Serum Amyloid A	SAA VET	- 1ml serum or plasma.
Thyroid , Equine	THYPALLI	- 2ml serum or plasma.
Vitamin E in serum	NDIK	- 2ml serum.
Lawsonia intracellularis qPCR	LAWPCR	- Feces, ileum, or tonsillar tissue.

- Horses with EPM may present with asymmetrical muscle wasting or weakness – diagnostics to consider include Sarcocystis neurona EPM SAG 2,3,4 ELISA and Neospora hughesi ELISA. Both assays are referred to Equine Diagnostic Solutions.
- Cyathostomiasis (encysted small strongyle larval infection) may cause chronic ill thrift. In these cases the absence of strongyle eggs and larvae on fecal floatation does not rule out a diagnosis of cyathostomiasis.
- Lawsonia intracellularis, the causative agent of Equine Proliferative Enteropathy, effects horses in the weanling to yearling age range, from approximately 2 to 18 months of age. Rarely adult horses may be affected.

9. Equine Cryptorchid

Tests Performed	Test Code	Samples Needed

Estrone Sulfate	E1S	1ml Serum (separated) or plasma
Testosterone baseline	TE	

- Horses must be at least 3 years of age. If less than 3 years consider HCG or GnRH Response, Testosterone

10. Equine Diarrhea, Adult (Acute) Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Anaerobic Bacterial Culture Clostridium perfringens Genotype PCR	ANAER CPGPCR	- Fecal swab in anaerobic transport media shipped at room temperature. - Clostridium perfringens genotyping PCR to further identify which genes for which toxins are present.
Clostridium difficile Toxins (A/B)	CLDT	- Feces refrigerated and less than 24 hours old or frozen.
Coronavirus PCR, Beta	BCOR	- Fresh feces in leak-proof container.
Fecal Flotation	FLOAT	
Hemogram, Large Animal Examination for blood parasites included	LA CBC	- (2) Air dried blood smears. - EDTA whole blood (lavender top tube).
Large Animal Chemistry	LA P	- Heparinized plasma (separated from a green top tube) . - Serum (separated).
Lawsonia intracellularis PCR	LAWPCR	- Feces (most common in 4-7 M old foals but can occur in 3 M to 13 M old foals).
Potomac Horse Fever PCR	EHRR	- EDTA whole blood (lavender top tube).
Salmonella culture	SALM	- Fecal swab in Amies transport media - Fresh fecal sample in sterile container (fill to line on container but do not overfill) or in ParaPak ® transport media to assist with Salmonella recovery.
Selenium, whole blood	SEL	- EDTA whole blood (lavender top tube). - Heparin whole blood (green top tube).

- Ship chilled (keep feces for toxin testing frozen) except for ParaPak®, Port-a-cul™ and slides which should be kept at room temperature.

11. Equine Diarrhea, Adult (Chronic) Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Fecal Flotation	FLOAT	- Fresh feces in leak-proof container.
Hemogram, Large Animal	LA CBC	- (2) air dried blood smears. - EDTA whole blood (lavender top tube).
Large Animal Chemistry	LA P	- Heparinized plasma (separated from a green top tube). - Serum (separated).
Salmonella culture	SALM	- Fecal swab in Amies transport media - Fresh fecal sample in sterile container (fill to line on container but do not overfill) or in ParaPak® transport media to assist with Salmonella recovery.
Sand Recovery Analysis	SAND	- Fresh feces in leak-proof container (8-10 fecal balls)
Selenium, whole blood	SEL	- EDTA whole blood (lavender top tube). - Heparin whole blood (green top tube).

12. Equine Diarrhea/Septicemia Foal Acute Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Anaerobic bacterial culture *Clostridium perfringens* Genotype PCR	ANAER CPGPCR	- Fecal swab in anaerobic transport media shipped at room temperature. - *Clostridium perfringens* genotyping PCR to further identify which genes for which toxins are present.
(2) Blood Culture, Aerobic	BLDAER	- (2) Inoculated aerobic blood culture bottles.
(2) Blood Culture, Anaerobic	BLDAN	
Clostridium difficile Toxins (A/B)	CLDT	- Fresh feces refrigerated and less than 24 hours old or frozen.
Coronavirus PCR, Beta	BCOR	- Fresh feces in leak-proof container
Fecal Flotation	FLOAT	
Hemogram, equine	CBC	- (2) air dried blood smears. - EDTA whole blood (lavender top tube).
Immunoglobulin G, Equine - TIA	EQUINE IGG	- Serum (separated).
Equine Chemistry	LA P	- Heparinized plasma (separated from a green top tube). - Serum (separated).
Rotavirus Antigen Detection Group A	RLA	- Fresh feces in leak-proof container.
Salmonella culture	SALM	- Fecal swab in Amies transport media. - Fresh feces in leak-proof sterile container. - Fresh fecal sample in sterile container (fill to line on container but do not overfill) or in ParaPak® transport media to assist with Salmonella recovery.
Selenium, whole blood	SEL	- EDTA whole blood (lavender top tube). - Heparin whole blood (green top tube).
Serum Amyloid A	SAA VET	- Serum (separated).

- If septicemia suspected, include (2) Blood cultures, aerobic and (2) Blood cultures, anaerobic.
- If fecal float is negative, consider Cryptosporidium ELISA and Giardia ELISA which are performed on fecal samples.

13. Equine Fever of Unknown Origin Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Aerobic Bacterial Culture	AER	- Feces, Pleural fluid, Peritoneal fluid, CSF, Tracheal wash.
Anaerobic bacterial culture	ANAER	
Anaplasma phagocytophilum	PCR	- Included at a reduced price in the Equine Fever of Unknown Origin PCR EHRE . - EDTA whole blood in lavender top tube.
Cerebrospinal Fluid Cytology or Peritoneal fluid cytology or Pleural fluid cytology or Tracheal wash cytology	CSFE PTFE PLFE TWE	- Also submit a red-top tube if culture is anticipated. - CSF/Pleural fluid/Peritoneal fluid in EDTA. - Smears (at least 2-3 unstained smears preferred).
Coronavirus PCR, Beta Included at a reduced price in the Equine Fever of Unknown Origin PCR	BCOR	- Feces
Salmonella culture	SALM	
Eastern Equine Encephalitis (EEE) PCR	EEEPCR	- EDTA whole blood in lavender top tube. - CSF in sterile container. - Urine in sterile container.
(3) Blood Culture, Anaerobic	BLDAN	- Whole blood in blood culture medium. For improved sensitivity, 3 samples 15-20 minutes apart if possible.
(3) Blood Culture, Aerobic/Fungal	BLDAER	
Equine Adenovirus 1 PCR	EAD1	- Nasal swab or deep pharyngeal swab or trans-tracheal wash or bronchoalveolar lavage or lung tissue.
Equine Adenovirus 2 PCR	EAD2	
Equine Arteritis Virus PCR	EAR	
Equine Rhinitis Virus A PCR	ERHA	
Equine Rhinitis Virus B PCR	ERHB	
Streptococcus equi Culture	SEQUCUL	
Influenza Virus Matrix PCR	IVMPCR	
Streptococcus equi PCR	SEQUPCR	
Equine Herpesvirus PCR	EHVPNL	- EDTA whole blood in lavender top tube. - Nasal swab or deep pharyngeal swab or trans-tracheal wash or bronchoalveolar lavage or lung tissue.
Equine Parvovirus PCR	EQPVPCR	- Serum, liver, EDTA whole blood.
Fecal Floatation	FLOAT	- Fresh feces from animals 3 days or older.
Hemogram, Large Animal	LA CBC	- EDTA whole blood in lavender top tube.
Equine Chemistry	LA P	- Heparinized plasma (separated from a green top tube). - Serum (separated).
Leptospira MAT, 5 standard serovars	LEPTO	

West Nile Virus (WNV) IgG/IgM Capture ELISA Combination	WNELPL	- Serum.
Serum Amyloid A	SAA VET	
Equine Infectious Anemia (EIA) Virus c-ELISA	EIAEL	
Potomac Horse Fever PCR	EHRR	- EDTA whole blood in lavender top tube.
Tracheal Wash Cytology	TWE	- Tracheal wash fluid in EDTA - Smears (at least 2-3 unstained smears preferred) - Submit a red-top tube if culture is anticipated.
Urinalysis, Routine	UA	- Urine in sterile container.
Urine Culture	URCUL	
Leptospira Real-time PCR	LEPTPCR	
West Nile Virus (WNV) PCR	WNVPCR	- CSF. - Brain or spinal cord (PM).

- For fever in a foal, please refer to Equine Diarrhea/Septicemia, Neonatal Foal Acute Diarrhea Diagnostic Plan.
- This diagnostic plan is designed to detect a broad spectrum of systemic bacterial, viral, and some blood parasite causes of acute fever, as well as certain inflammatory changes which may assist in detecting the underlying problems.
- Viral causes of illness are best detected during the first week of illness.

14. Adult equine Fever of Unknown Origin

Tests Performed	Test Code	Samples Needed
Anaplasma PCR	EHRE	- EDTA whole blood
Potomac Horse Fever PCR	EHRR	
Equine Herpesvirus 1 PCR	EHV1PCR	
Equine Herpesvirus 4 PCR	EHV4PCR	
Coronavirus PCR	BCOR	- Fresh feces, colon or colon contents in leak-proof container.
Equine Respiratory PCR	ERPNL	- Nasal swab or nasopharyngeal swab or oropharyngeal swab or tracheal wash or bronchoalveolar lavage or lung tissue (PM)

15. Equine Foal Joint Ill Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Aerobic Bacterial Culture	AER	- synovial fluid sample in transport media. - Synovial fluid in EDTA tube (red top tube).
Anaerobic Bacterial Culture	ANAER	- Synovial fluid in anaerobic transport media. - Synovial fluid in EDTA tube (red top tube).
Blood Culture, Aerobic/Fungal	BLDAER	- Inoculated aerobic/fungal on specific culture media.
Blood Culture, Anaerobic	BLDAN	
Hemogram	LA CBC	- Two Air dried blood smears. - EDTA whole blood.
Immunoglobulin G, Equine - TIA	EQUINE IGG	- Serum
Equine Chemistry	LA P	- Heparinized plasma - Serum
Serum Amyloid A	SAA VET	- Serum
Synovial Fluid Cytology white blood cell count, total protein	JFE	- Two air dried slides of synovial fluid. - Synovial fluid in EDTA tube.

16. Equine Myopathy Plan

Horses with EPM (Equine Protozoal Myeloencephalitis) may present with asymmetrical muscle wasting or weakness.

Tests Performed	Test Code	Samples Needed
Creatine kinase	CK	- 1ml Serum or heparinized plasma before exercise and after 15 min of walk/trot.
Selenium, whole blood	SEL	- EDTA whole blood. - Heparin whole blood.
Vitamin E in serum	NDIK	- 1ml Serum (separated from clot and protected from light).

- Muscle biopsy recommendations vary depending on the type of equine myopathy suspected.
- Genetic testing is required.

16. Equine Respiratory Adult Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Aerobic Bacterial Culture	AER	- Trans-tracheal washes fluid. - Swab of TTW in bacterial transport media. - Swab of lung or biopsy of lung tissue aseptically collected and placed in aerobic transport media.
Anaerobic Bacterial Culture	ANAER	- Swab of transtracheal wash (TTW) (preferred sample). - Swab of bronchoalveolar lavage (BAL) fluid in anaerobic transport media.
Fungal Culture	FUNGCM	
Equine Herpesvirus PCR	EHVPNL	- EDTA blood (min. 2ml) Nasal or nasopharyngeal swab in red top tube with 0.5ml sterile saline.
Equine Respiratory PCR Consists of multiple PCR assays: Equine Herpesviruses 1 and 4, Equine Adenoviruses 1 and 2, Equine Rhinitis viruses A and B, Influenza A virus (matrix), Equine arteritis virus and *Streptococcus equi*	ERPNL	- Nasal swab or deep pharyngeal swab (in sterile, sealed vials with several drops of saline added). - Transtracheal wash or Bronchoalveolar lavage or lung tissue (in sterile leak-proof containers).
Selenium, whole blood	SEL	- EDTA whole blood. - Heparin whole blood.
Streptococcus equi Culture	SEQUCUL	- Nasal swab or deep pharyngeal swab (in sterile, sealed vials with several drops of saline added) - Transtracheal wash or Bronchoalveolar lavage
Tracheal Wash Cytology	TWE	- Tracheal wash fluid in EDTA. - Smears (at least 2-3 unstained smears preferred). - Also submit a red-top tube if culture is anticipated.

- To maximize sensitivity, it is recommended that both a streptococcus equi PCR (included in the PCR) and a streptococcus equi culture be run in parallel (requiring both a nasal swab in a red top tube with 0.5mL of sterile saline and a nasal swab in bacterial transport media).

18. Equine Respiratory, Foal Diagnostic Plan

Tests Performed	Test Code	Samples Needed
Aerobic Bacterial Culture Rhodococcus equi included	AER	- A swab inoculated with sample and placed in aerobic transport media (Amies without charcoal). - Transtracheal wash (TTW) (preferred).
Anaerobic Bacterial Culture	ANAER	- A swab inoculated with tracheal wash fluid and placed in anaerobic transport media. - Fresh lung (>2-3 cm in diameter, minimum size). - Swab of lung or piece of lung tissue aseptically collected and immediately placed in anaerobic transport media.
Equine Respiratory PCR	ERPNL	- Nasal or pharyngeal swabs in viral transport media or a red top tube with 0.5ml sterile saline - Transtracheal wash (TTW) (preferred)
Fecal Floatation	FLOAT	- Fresh feces in leak-proof container.
Fibrinogen (heat-precipitation)	FIB-SCH	- EDTA whole blood
Fungal Culture	FUNGCM	- Swab of transtracheal wash (TTW) (preferred sample) or swab of bronchoalveolar lavage (BAL) fluid in anaerobic transport media or Amies transport media. - Swab of lung or piece of lung tissue in anaerobic transport media or Amies transport media
Hemogram, Equine	LA CBC	- (2) air dried blood smears. - EDTA whole blood (lavender top tube).
Immunoglobulin G, Equine - TIA	EQUINE IGG	- Serum (separated).
Rhodococcus equi virulence PCR	REQUPCR	- Transtracheal wash (TTW) (preferred).
Tracheal Wash Cytology	TWE	- Two air dried slides of fluid. - Transtracheal wash (TTW) (preferred).

19. Equine Metabolic Syndrome Diagnostic Plan

Tests Performed	Test Code	Samples Needed
ACTH Baseline	ACTHEQ	- EDTA plasma frozen within 4 hours of obtaining sample.
ACTH Pre TRH Response	ACTHPRETRH	
ACTH Post TRH 10 min	ACTHPOSTTRH1	
ACTH Post TRH 30 min	ACTHPOSTTRH2	
Insulin Baseline	INSEQ	
Leptin	LEPTIN	
Glucose	GLU	- Serum (separated)
T4 (Thyroxine)	T4I	
Myoglobin		- Urine sample (spectro)

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