

# Antemortem Respiratory Diagnostics: Transtracheal Wash (TTW) and Bronchoalveolar Lavage (BAL)

Terry J. Engelken, DVM MS  
Jim Thompson, DVM MS  
Vicki Cooper, DVM PhD  
College of Veterinary Medicine  
Iowa State University



# Antemortem Respiratory Diagnostics



TTW and BAL are useful tools

- individual animals
- problem pens (high morbidity)
- herd outbreaks
- common research tool

Advantages of procedure

- relatively non-invasive
- done prior to treatment
- sample at the point of infection
- more specific than nasal swab
- versatile sample / easily handled
- very useful for diagnostics



# Antemortem Respiratory Diagnostics



TTW / BAL not technically difficult

- commercial kits are available
- practitioner “adaptations”
- adequate restraint needed
- “clean” environment



TTW / BAL give similar results

- sterile collection equipment
- BAL tubes are reusable
- contamination from URT?

# Antemortem Respiratory Diagnostics

- TTW Procedure

## Equipment

- large TTW kit (HarVet, Inc)
- 30 cc. syringes containing nonbacteriostatic saline
- 2% Lidocaine and syringe + needle
- scalpel blade
- clippers and surgical prep

# Antemortem Respiratory Diagnostics

- TTW Procedure (cont.)

Adequate head restraint – chute + halter (cross tie if needed)

- small area over middle 1/3 of trachea is clipped
- surgical prep

Lidocaine “bleb” on point of insertion

- midline of trachea between the muscle bundles
- scalpel blade incision through the skin



# Antemortem Respiratory Diagnostics

- TTW Procedure (cont.)

Insertion of trocar and cannula between cartilaginous rings

- firm hold on the trachea
- may feel two “pops” from trocar and cannula

Sterile polyethylene tubing is introduced and pushed

- stop when you feel resistance

Attach syringe and 30 ml. of saline is introduced

- aspiration as tubing is moved up and down

# Antemortem Respiratory Diagnostics





# Antemortem Respiratory Diagnostics



# Antemortem Respiratory Diagnostics



# Antemortem Respiratory Diagnostics



# Antemortem Respiratory Diagnostics



# Antemortem Respiratory Diagnostics

- Need a minimum of 1.5 - 3 mls. for diagnostic sample

Sample may be clear or cloudy - may contain flecks of fibrin

- may need to inject more saline and repeat procedure

Keep cool until shipment and ship on ice with other samples

- red top tube of blood and nasal swabs

Please include diagnostic lab submission form and calf data form

# Antemortem Respiratory Diagnostics

- TTW and BAL samples can be used for multiple tests

Submitted in plastic container or red top tube

- Virus isolation, PCR, IHC or FA
- Culture and sensitivity

Samples in purple top (EDTA) can be used for cytology

- also for IHC and FA
- EDTA impedes PCR and VI

