Physical Examination Includes:

1. Pattern and frequency of resting respiration

* Rapid shallow respiration suggests restrictive disease or pain
* Accentuated expiratory effort suggests obstructive disease

2. Examination of the upper respiratory Tract

* Conformation and symmetry of head and muzzle
* Nasal passages: Mucous membrane color, nasal discharge, naso lacrimal duct patency
* Sinuses can be percussed in large animals
* Oral exam: Mucous membrane color, CRT, sublingual area, tonsil, hard palate
* Larynx and trachea: External palpation - assess the firmness of palpation that elicits a cough
* Lymph nodes: Intermandibular and retropharyngeal

3. Auscultation of the lungs

**Evaluate both resting and deep inspiration**

Normal lung sounds: Vibration of air in central airways (>2mm) transmitted through pulmonary parenchyma to the chest wall:

bronchial sounds: generated in airways

vesicular sounds: large airway sounds heard at the periphery after attenuation during transmission through aerated parenchyma

**Changes in sound transmission**:

consolidated areas: more efficient acoustical conduction

hyperinflation: attenuation of normal airway sounds

pleural effusion or pneumothorax: increased reflection of sound at the pleural surface

Increased intensity of normal sounds:

increased air velocity: increased ventilatory effort or narrowed airways with higher flow rates

inspiratory sounds: extrathoracic airway obstruction

expiratory sounds: partial collapse of intrathoracic airways characteristic of obstructive diseases

**Abnormal or adventitious sounds changes in sound production:**

discontinuous (<20 msec.): crackles (rales). Explosive equalization of pressure as atelectatic areas reopen. Excess secretions in airways, rupture of fluid films or bubbles

continuous (>250 msec.): wheezes (rhonchi). Vibration of constricted airway walls or intraluminal mass. Low pitched continuous sounds associated with secretions in airways may change after coughing

pleural friction rubs: sliding of inflamed pleural surfaces

Clinical correlations of abnormal lung sounds:

late inspiratory crackles: atelectasis and pulmonary edema

expiratory wheezes: characteristic of obstructive airway disease

4.Percussion

Resonant sound obtained by tapping over inflated lung vs. dull sound obtained over tissue devoid of air:

lung just beneath the chest wall (4 7 cm), large intrathoracic masses (> 2 3 cm) or pleural effusion can be delineated.

Normal Lung Fields for Large Animal Species:

Equine: Tuber coxae 17th space

Tuber ischii 16 space

Mid-thorax 13 space

Pt. Shoulder 11 space

Olecranon 6 space

Bovine: Tuber coxae 11th space

Mid-thorax 9 space

Olecranon 5 space

Ovine: Tuber coxae 11th space

Mid-thorax 8 space

Olecranon 5 space