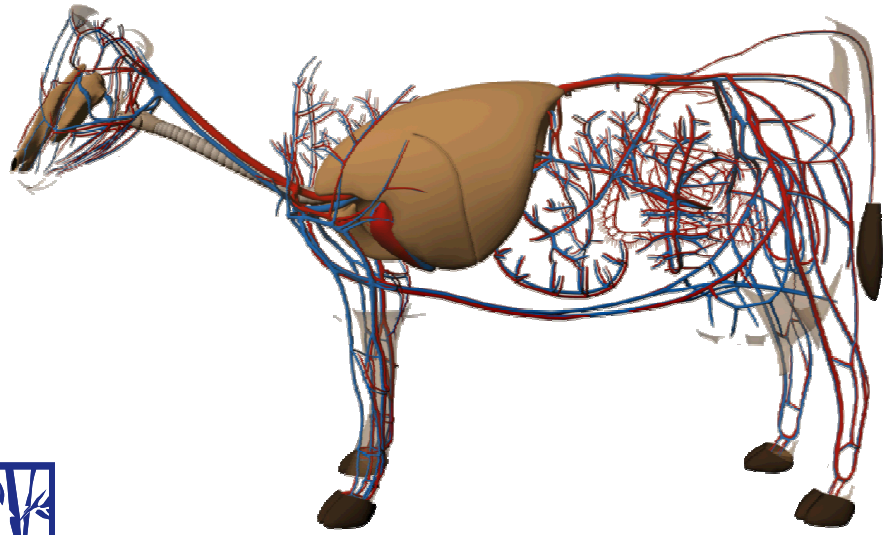
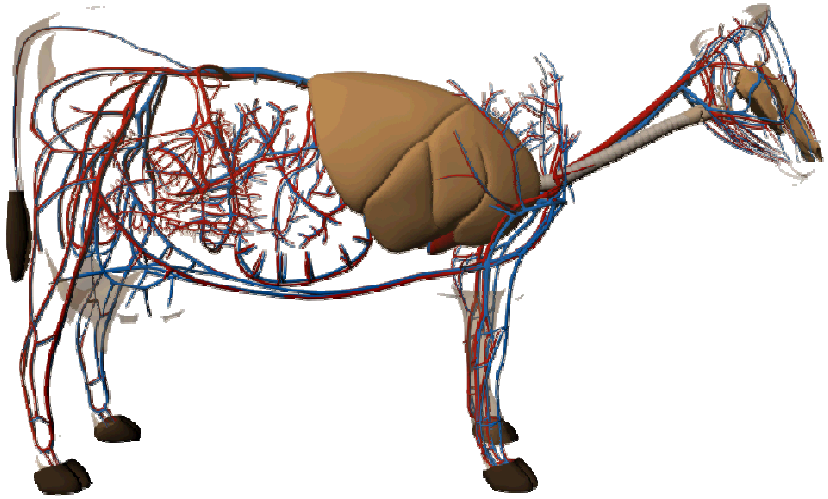
SAND2011-7511P

Auscultation: Lungs, Heart, GI Tract

October 2011

Auscultation of the Respiratory System



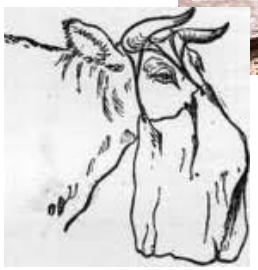


Bovine Lung Field

- **The bovine lung field is relatively small**
- **Breath sounds can heard in a triangle formed by:**
  - the triceps cranially,
  - the attachment of the ribs to the vertebral column dorsally
  - an imaginary line joining the point of the elbow with the eleventh intercostal space
- **Lung sounds are loudest in mid thorax**

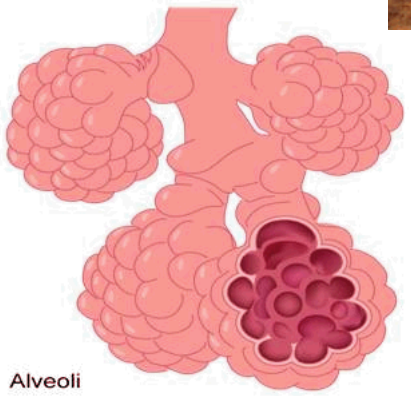
Auscultation of the Respiratory System

- **Auscultation of the respiratory system includes listening to the trachea and lungs**
- **Normal respiratory rates ruminants are very similar**
  - **Cattle: 18 – 35**
  - **Calf: 20 – 40**
  - **Goat: 15 - 30**
  - **Kid: 20 - 40**
  - **Sheep: 12 - 20**
  - **Kid: 20 – 40**
- **Abnormal sounds**
  - Crackles, wheezes, bronchial sounds



Auscultation of the Respiratory System

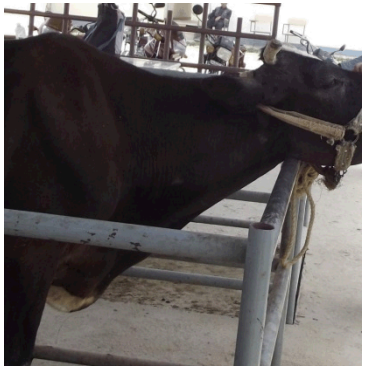
- **Normal sounds**
  - Trachea
    - **Large airway sounds are normally sound**
    - **Sound like air moving through a large tube**
    - **Less turbulence**
  - Lungs
    - **Lung sounds are soft**
    - **Abnormal sounds are characterized as:**
      - Crackles
      - Wheezes
      - Bronchial sounds



Abnormal Sounds: Trachea

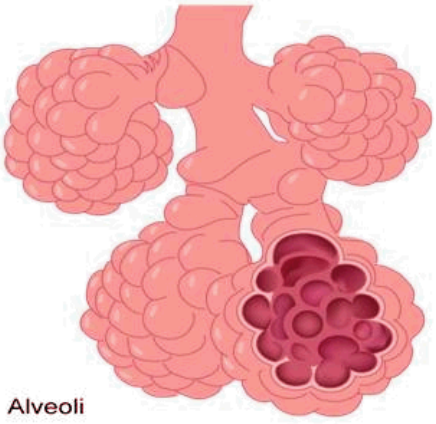
- **Abnormal tracheal sounds are often associated with narrowing of the upper airway and/or fluid accumulation in the trachea**

- **Disease that can result in tracheal pathology include:**
  - Necrotic laryngitis
  - Infectious bovine rhinotracheitis (IBR)
  - Parainfluenza 3
  - Pulmonary edema
  - Bronchopneumonia
  - Parasitic pneumonia
  - Aspiration pneumonia

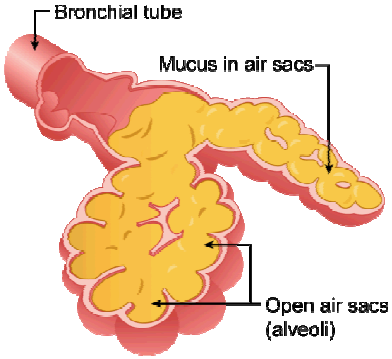


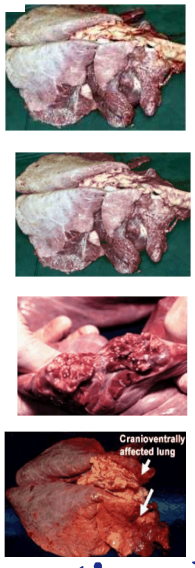
Abnormal Breath Sounds: Bronchial Tones

- **Bronchial tones are associated with:**
  - Consolidated lung
    - **Bronchopneumonia – cranial ventral consolidation**
  - Atelectisis
    - **Collapsed lung – prematurity, severe consolidation, pleural effusion**



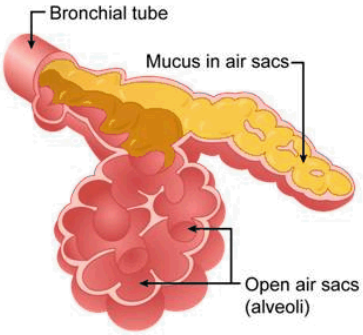
- **Bronchial tones sound like tracheal sounds only not as loud**
- **Mostly heard in the cranial ventral area of the lung – best on the right side**
  - Bronchopneumonia pathogenesis





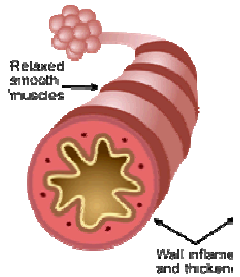
Abnormal Breath Sounds: Crackles

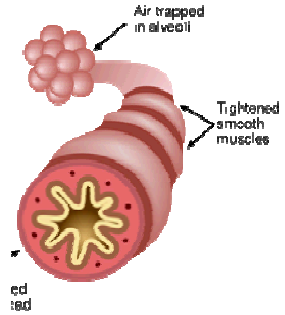
- **Crackles occur when fluid is present in the lower airways**
  - The fluid can be purulent or serous
  - Often heard with broncho- and viral pneumonias
- **Crackles are discontinuous sounds because their intensity fluctuates**
  - Fine crackles fluctuate rapidly in intensity - may be produced by airways snapping open
    - **Sometimes associated with emphysema**
  - Coarse crackles fluctuate more slowly and have a lower frequency
    - **Coarse crackles are produced by fluid movements within the larger airways.**



Abnormal Breath Sounds: Wheezes

- **Wheezes are created by narrowing of the airways**
  - Airways are narrowed by:
    - **Smooth muscle constriction**
    - **Mucous**
  - Wheezes can be heard in animals with allergic airway disease (asthma), viral pneumonia, bacterial pneumonia, and parasitic pneumonia
- **Wheezes can be described as continuous sounds because the intensity gradually decreases during their length**
- **Squeaks are sometimes regarded as a sub type of wheezing sounds.**

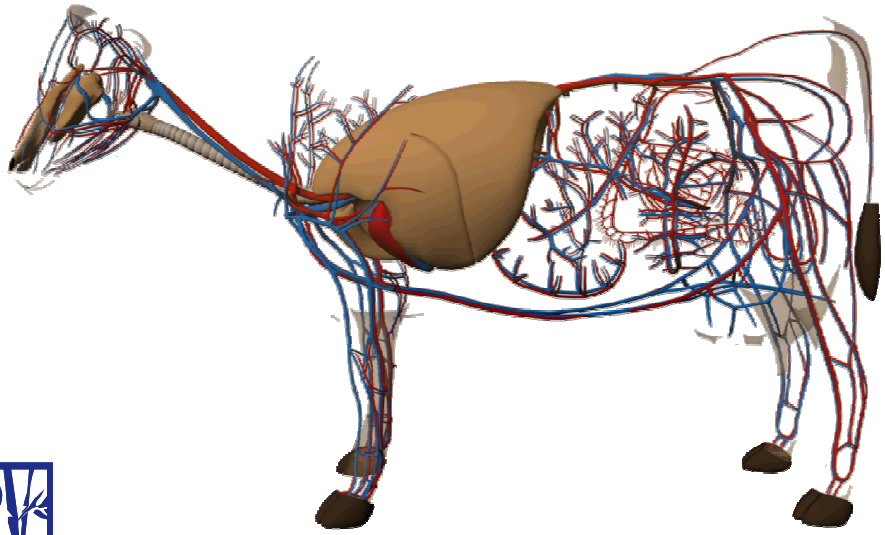


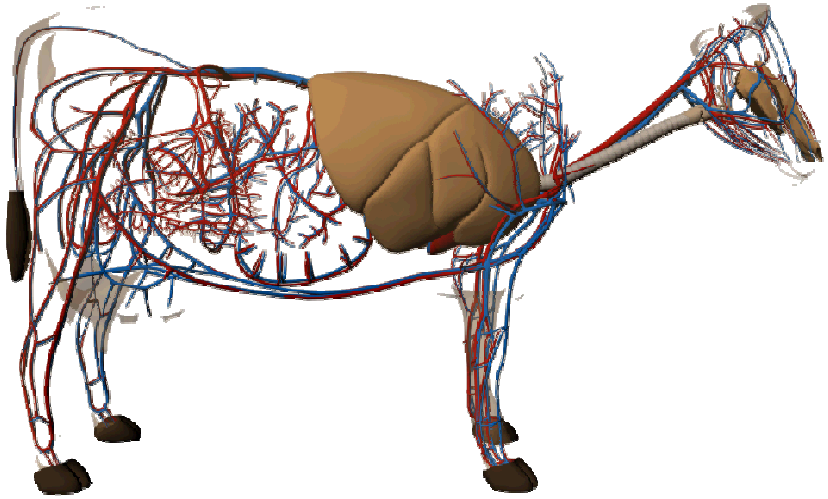


BIOSECURITY ENGAGEMENT PROGRAM

International BIOLOGICAL THREAT REDUCTION

Auscultation of the Heart



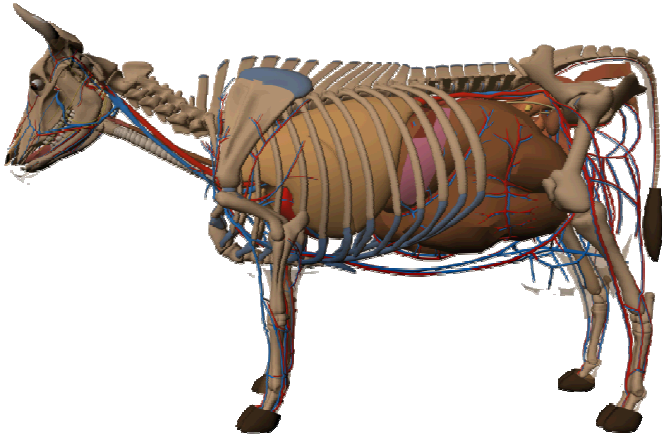


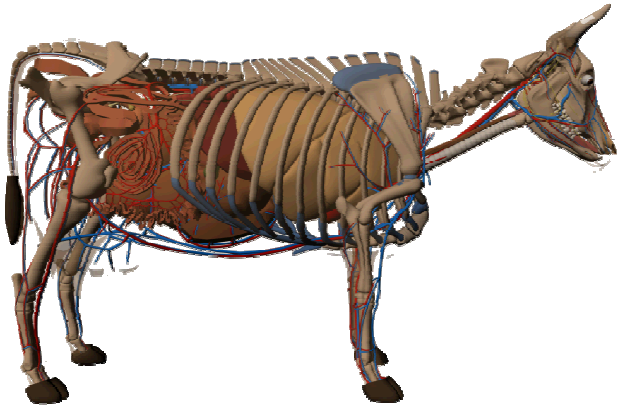
Cardiac Auscultation

- **Heart sounds are best heard under the triceps/elbow between the 3rd and 5th intercostal spaces on the left side but can be heard on the right side**
  - The heart sounds are difficult to hear but if the stethoscope is pushed far cranially, under the elbow, the heart sounds are audible
  - Usually heart sounds are loudest on the left side when the stethoscope head is completely hidden by the triceps mass
- **The normal heart rate is 50 to 80 beats/minute**

Auscultation of the Heart: Normal Heart Sounds

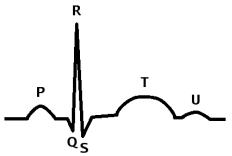
- **Only the first two sounds heart sounds are heard**
  - S1 the first heart sound is the loudest and is associated with the closure of the atrioventricular valves
    - **It is loudest at the 4th intercostal space**
  - S2 is heard shortly after S1 and is associated with the closure of the aortic and pulmonic valves
    - **It is loudest at the 3rd intercostal space**

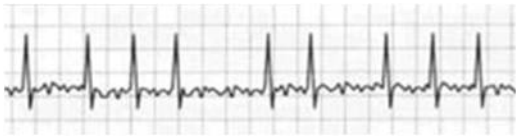


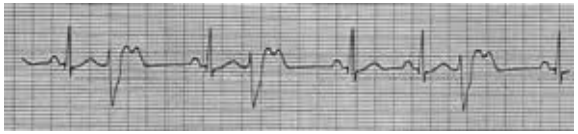


Auscultation of the Heart: Arrhythmias

- **Arrhythmias are disturbances in the normal heart rhythm**
  - Regularly irregular
    - **Bradycardia**
    - **Tachycardia**
    - **Premature ventricular contractions located in a single foci**
    - **Sinus bradycardia**
  - Irregularly irregular
    - **Atrial fibrillation**
    - **Paroxysmal supraventricular tachycardia**
    - **Ventricular tachycardia**
    - **Premature ventricular contractions**
  - In cattle arrhythmias are often associated with electrolyte imbalances
    - ***Hypokalemia***

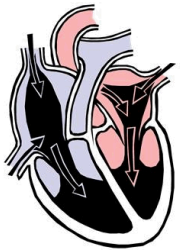


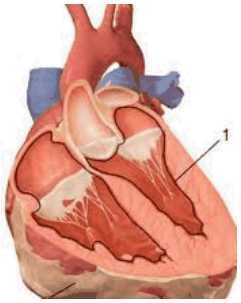




Auscultation of the Heart: Murmurs

- **Murmurs are created by turbulent blood flow in the heart**
- **The most common causes of heart murmurs in cattle is endocarditis**
  - The intensity of the murmur will depend on location – AV valves, aortic, or pulmonic
- **Calves with foot and mouth disease may have cardiomyopathy, which may create a murmur**
- **Murmurs may also be heard with anemia, cardiomyopathy, and congenital anomalies such as ventricular septal and atrial septal defects**

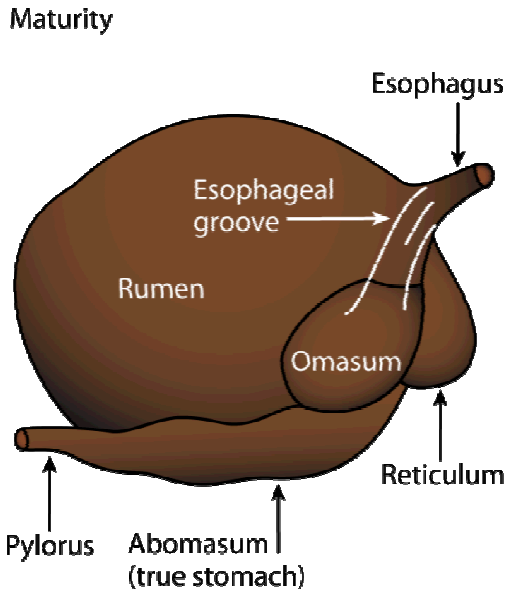




Auscultation of the Heart: Pericarditis

- **Traumatic reticulopericarditis (hardware disease) can create abnormal lung sounds**
  - Sloshing sound generated by an air – fluid interface
  - Only occurs if gas producing bacteria are present
    - **Most rumen flora are gas producing organisms**

Auscultation of the Gastrointestinal Tract

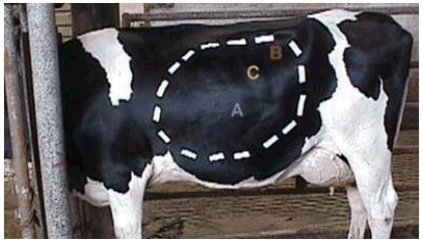


Gastrointestinal Auscultation

- **Auscultation of the gastrointestinal (GI) tract should include the rumen, large and small intestines**
  - The rumen is the only distinct sound that can be heard
    - **It will be heard best in the paralumbar fossa**
    - **A normal contraction will cause the rumen to bulge in the paralumbar fossa**
  - Small and large bowel will sound similar and can be somewhat discerned by anatomy
    - **Both can be heard on the right side**
    - **The spiral colon and cecum are best heard in the right paralumbar fossa**

Gastrointestinal Auscultation: Abnormal Sounds

- **Tympanic sounds are heard when percussion and auscultation are done simultaneously**
  - Caused by a gas filled viscous
- **What are the most common causes of tympany on the left side?**



Gastrointestinal Auscultation: Abnormal Sounds

- **What are the most common causes of tympany on the right side?**