CVS Lecture 2 Addendum 1:

COMPARATIVE PHYSICAL AUSCULTATION OF THE HEART

Purpose of Auscultation - to detect abnormalities of the heart's action

Heart sounds: "lubb –dupp"

Four heart sounds:

1. First - closure of the A-V valves at onset of ventricular systole - the "lubb"
2. Second - closure of the aortic and pulmonary valves at onset of ventricular diastole - "dupp"
3. Third - very faint - rapid filling of ventricles in the first part of ventricular diastole
4. Fourth - rarely audible in normal heart - associated with atrial systole.

Using conventional **stethoscope** the first and second heart sounds can be examined valve by valve - the pulmonary, aortic, left A-V and right A-V, in sequence.

Anatomical landmarks used for auscultation of the valves:

Similar bony landmarks in all species: lies approximately **between ribs 3 to 6.**

Since the mass of the triceps covers the first five ribs in the domestic animals, the forelimb must be drawn forward or the chest piece of the stethoscope must be pushed under the caudal edge of the triceps muscle.

The valves are attached to the fibrous skeleton of the heart - the fibrous plate separating the atria and ventricles.

The dorso-ventral levels of the valves depend on the slope of the heart and this varies with the species:

In the horse and the ox, the long axis of the heart is approximately vertical, so the fibrous plate carrying the 4 valves is essentially parallel to the sternum.

In the dog and the cat, the long axis of the heart is oblique, thus the 4 valves are oblique to the sternum.

In general, in domestic animals, the points for preferential auscultation of the valves of the normal heart are:

Pulmonary valve: at the **left third intercostal space**

Aortic valve: at the **left fourth intercostal space**

Left A-V valve: at the **left fifth intercostal space**

Right A-V valve: at the **right fourth intercostal space.**

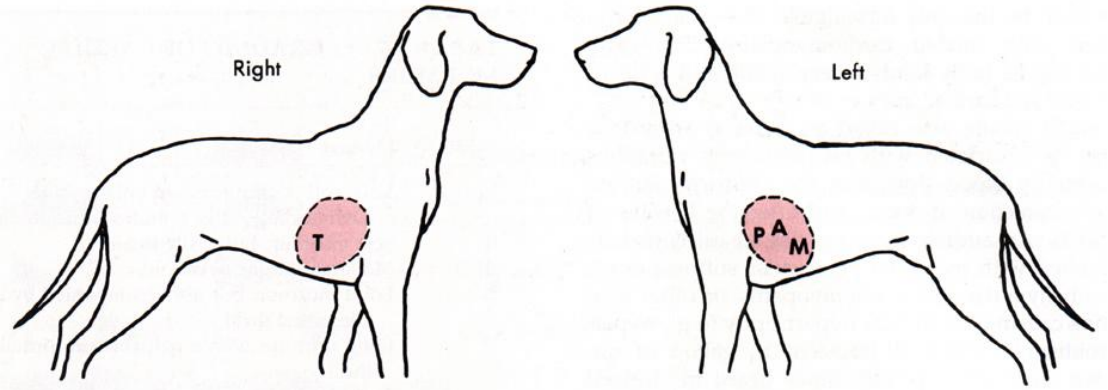

FIGURE 1-1. Approximate locations of various valve areas on chest wall. *T*, Tricuspid; *P*, pulmonic; *A*, aortic; *M*, mitral.

Nelson and Couto

Remember that in species with sloping hearts (dog and cat), the pulmonary valve is relatively far ventral, but it is more or less on the same level in species with vertical hearts (horse and ox).

Remember that in disease, the size and so position of heart may change,
so you must auscultate the heart over a wide area by 'inching' the chest piece of the stethoscope over the thorax.