



OBSTRUCTIVE SLEEP APNEA
A VIEW FROM THE HEART
Robert Albers, MD
New Mexico Center for Sleep Medicine
September 22, 2011

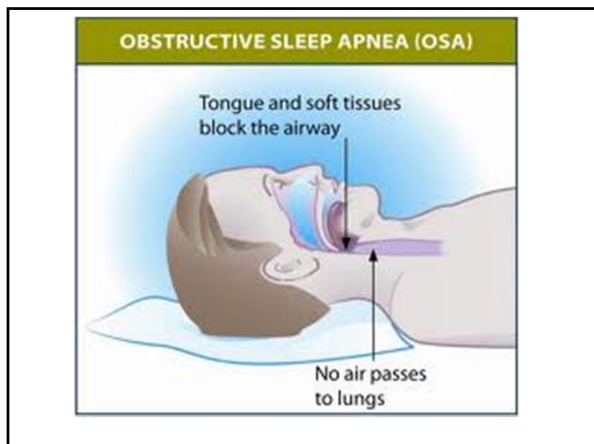
Obstructive Sleep Apnea Is Not Just Snoring!!

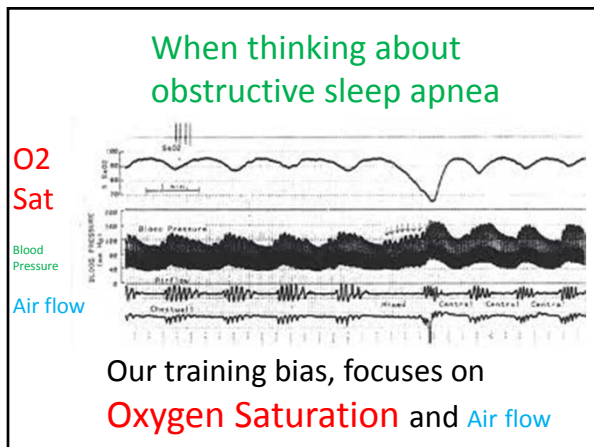


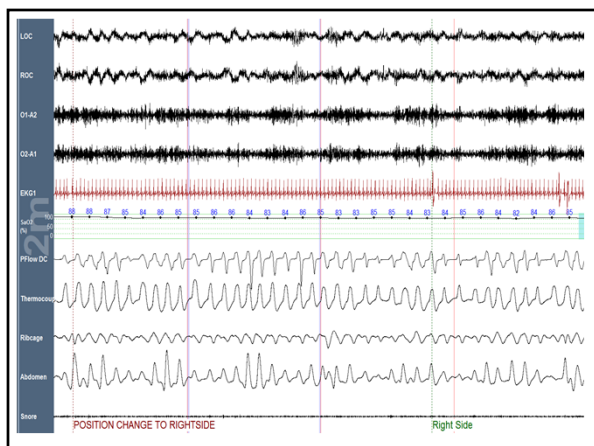
If Awake--- It is called **CHOKING**

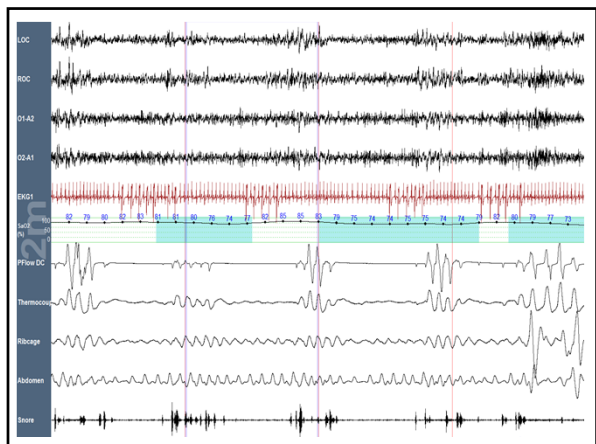


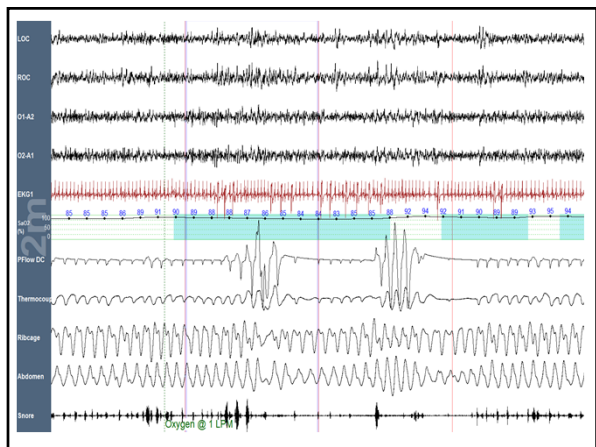
Mueller Maneuver

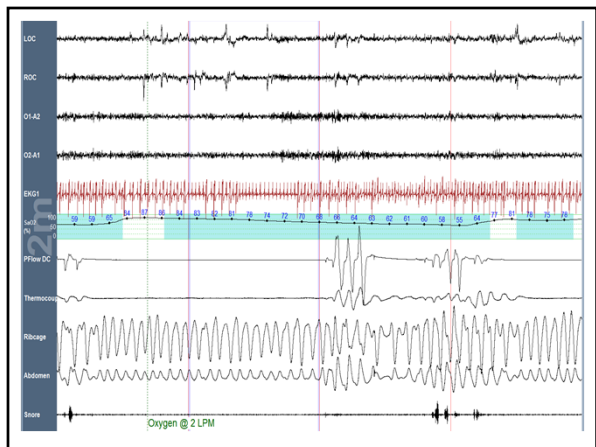


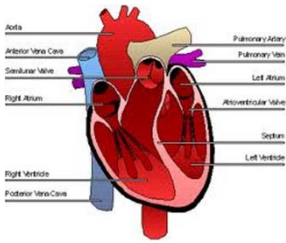












The other Organ in the Chest

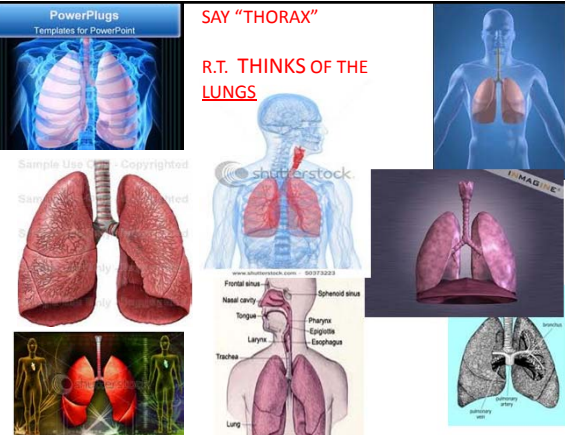
Most illustrations show the heart and lungs separate from each other

Basic physiology- focus on single systems -- **not interacting systems** ←

PowerPlugs
Templates for PowerPoint

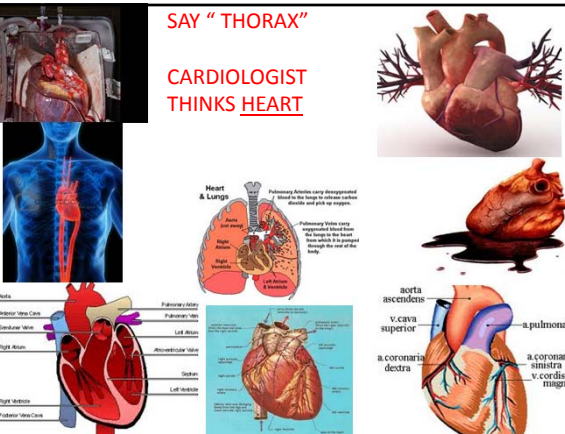
SAY "THORAX"

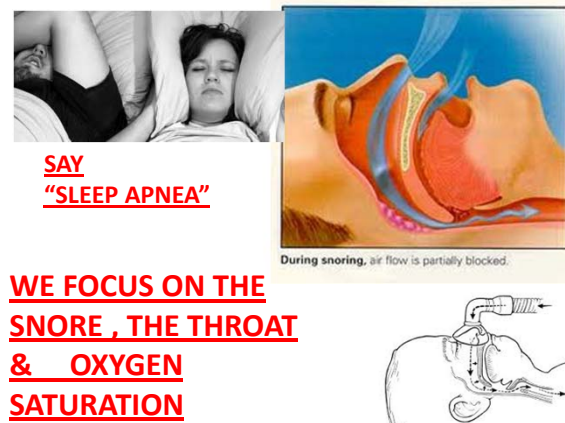
R.T. THINKS OF THE LUNGS



SAY "THORAX"

CARDIOLOGIST THINKS HEART

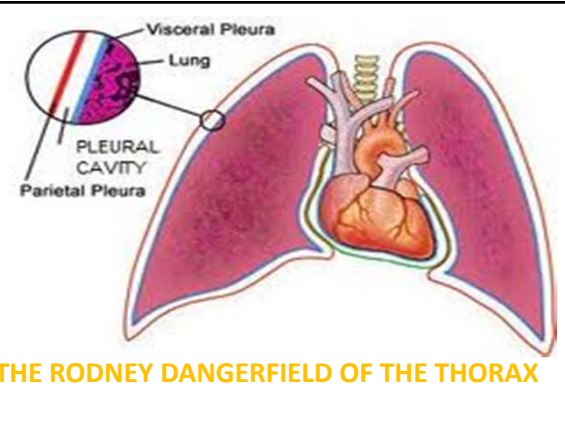




SAY
"SLEEP APNEA"

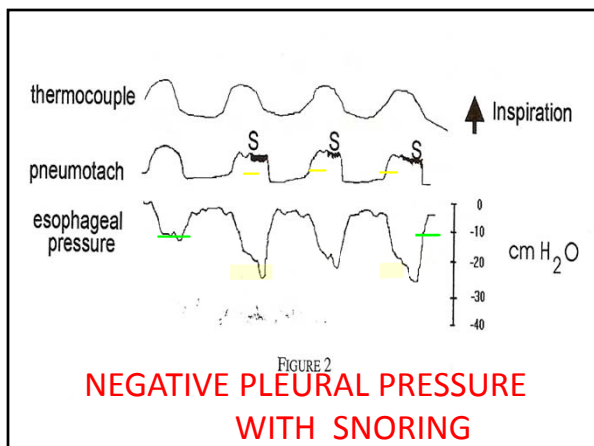
WE FOCUS ON THE
SNORE, THE THROAT
& OXYGEN
SATURATION

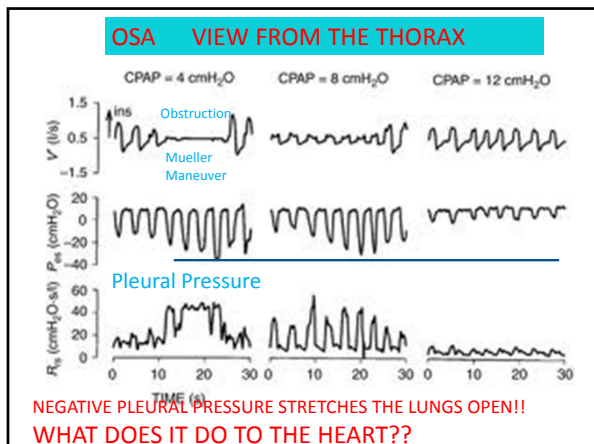
During snoring, air flow is partially blocked.

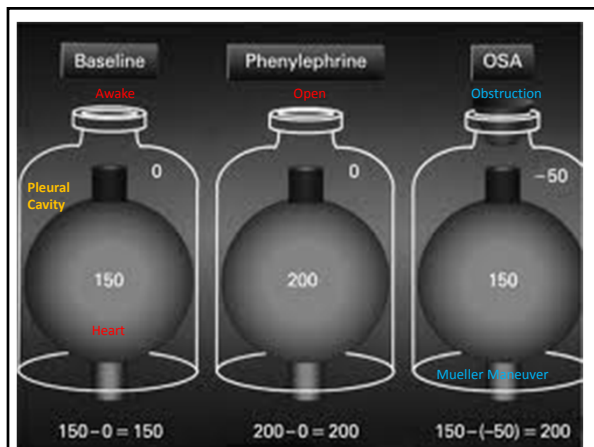


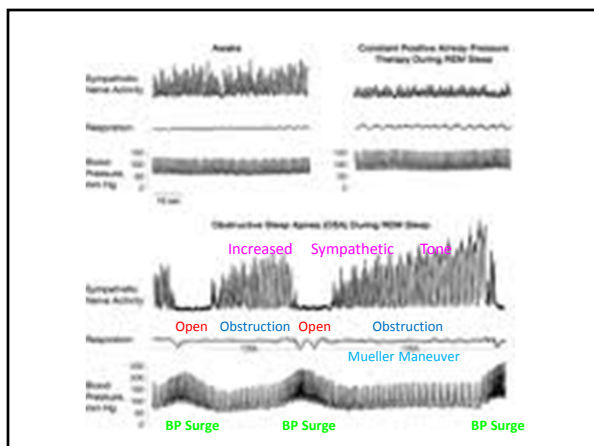
Visceral Pleura
Lung
PLEURAL CAVITY
Parietal Pleura

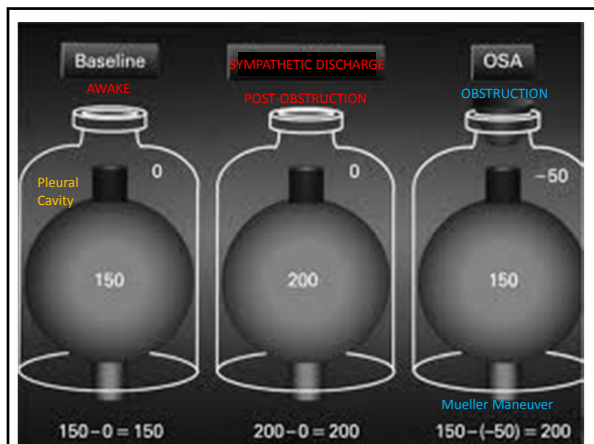
THE RODNEY DANGERFIELD OF THE THORAX











RISK OF MYOCARDIAL ISCHEMIA

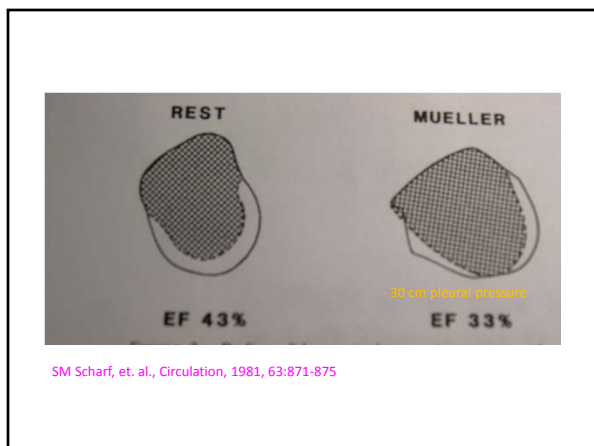
WITH ↓ O₂ DELIVERY

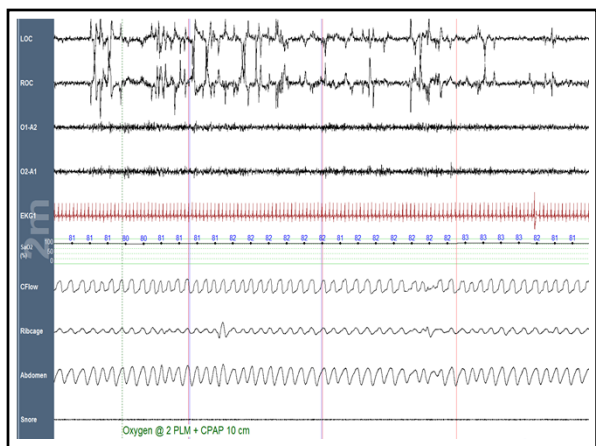
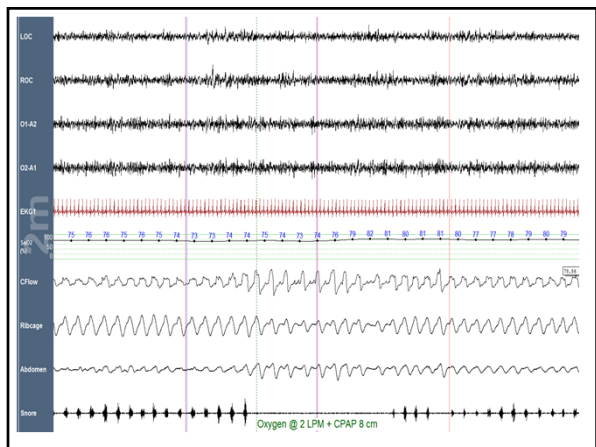
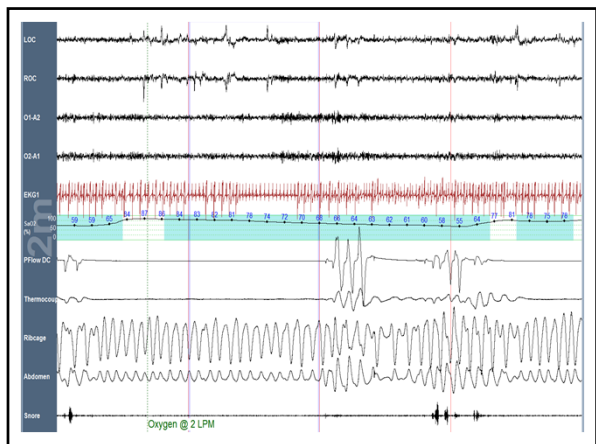
AND DEMAND ↑ O₂

The law of Laplace:

$$\text{Wall stress } (\tau) = \frac{[\text{cavity pressure } (P)] \times [\text{radius } (r)]}{2 \times [\text{wall thickness } (h)]}$$
 Thus as left ventricular cavity pressure increases (eg, aortic stenosis, hypertension), the wall thickness increases (hypertrophy) to maintain wall stress. Furthermore, as the cavity dilates (infarct expansion), wall stress increases to maintain cavity pressure.

Wall stress primary determinate of O₂ demand





PVC is a marker of **myocardial ischemia**

- Myocardial ischemia is due to myocardial wall stress.
- Increased negative pleural pressure increased the wall stress.
- The optimal CPAP pressure reduced the wall stress, even with mild hypoxemia

WHEN TREATING OSA

THINK ABOUT THE **PLEURAL CAVITY** AND THE **HEART**

ALONG WITH THE **AIRWAY**, **SNORING** AND **O2 SATURATION**
