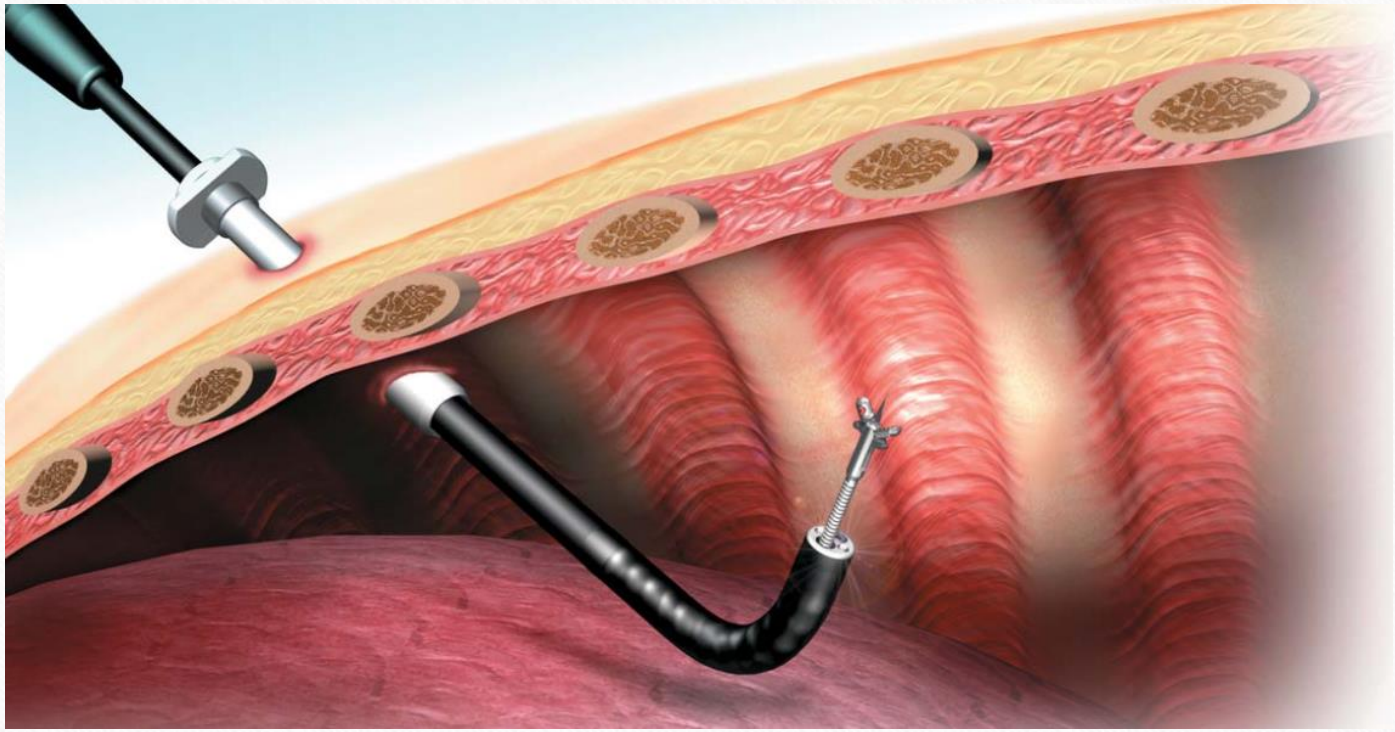
Medical Thoracoscopy



Surgical referral

- Biopsies and treatment
- Decortication of emypema
- VATS (video assisted thorascopic surgery)

Management

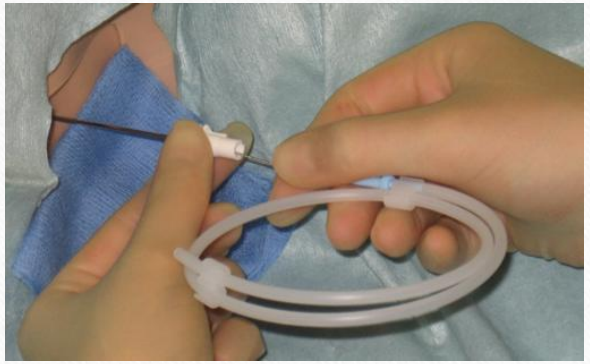
- Treat the cause
  - Initial and medium/ long term
    - ABCDE
    - Treat sepsis ….....

Remove fluid

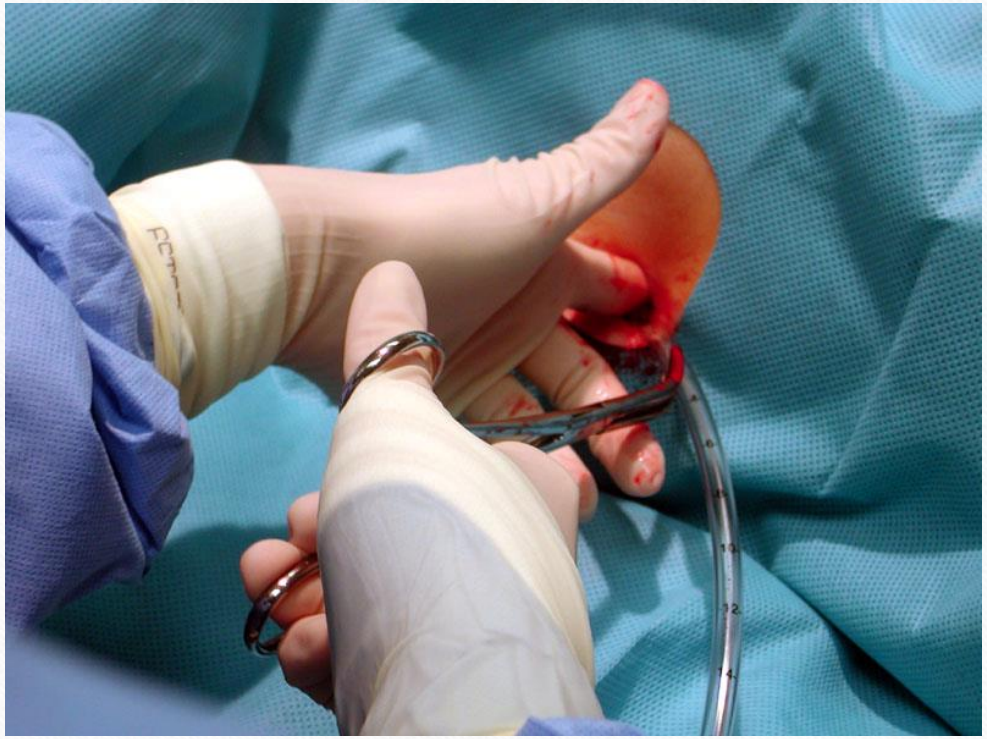
- Especially if complex infected or symptomatic from the fluid
- Options are then
  - Drain to dryness (infection or in cancer if desire to pleurodese)
  - Remove 1-2 litres to improve symptoms and monitor

Thoracentesis catheter

Seldinger intercostal drain

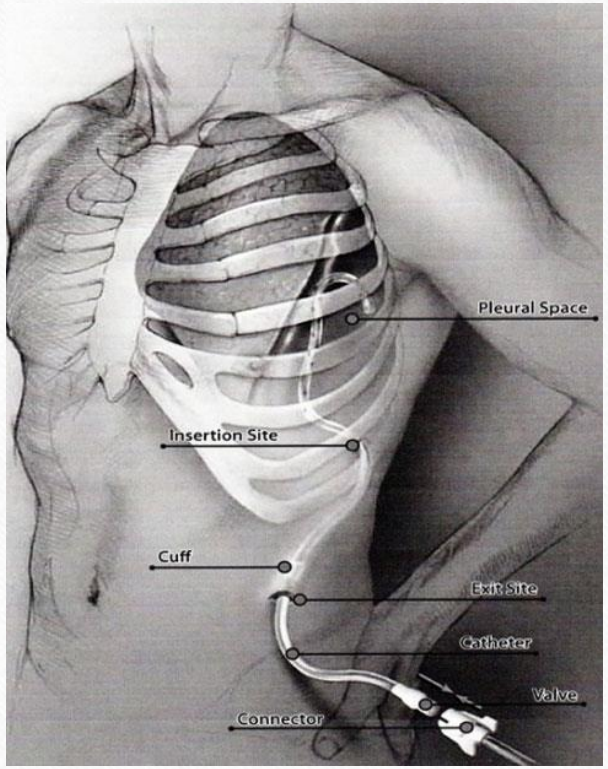
Surgical ‘large bore’ chest drain



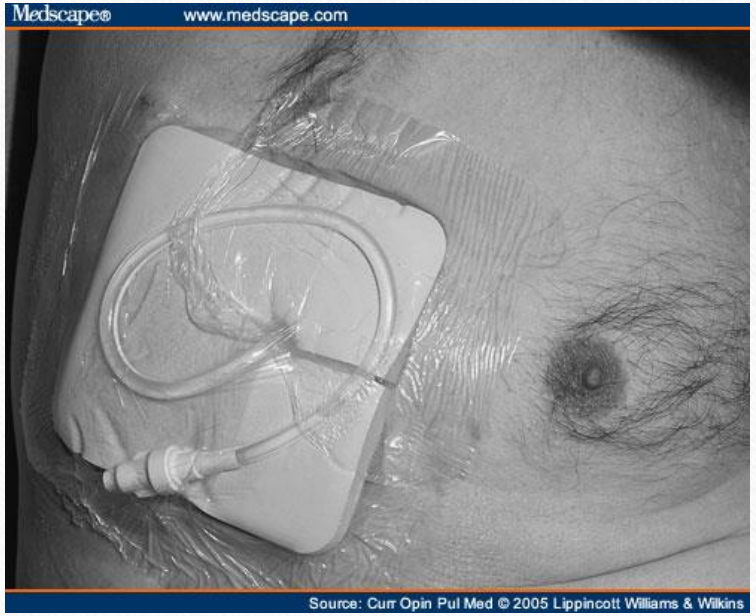
Malignant effusion

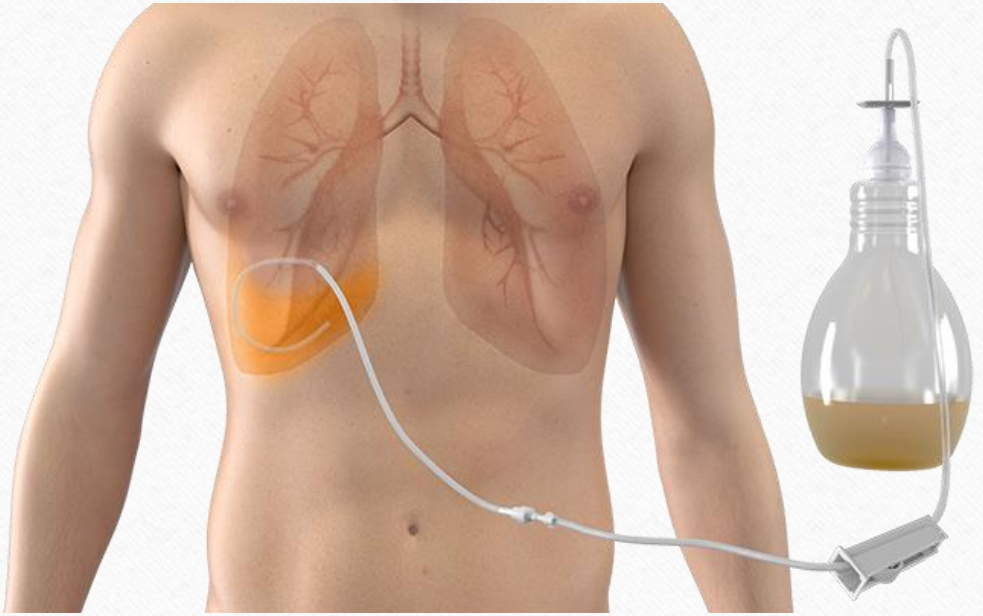
- By definition metastatic
- 90% will recur after drainage
- Option for definitive treatment
  - Medical Pleurodesis – 60% successful
  - Indwelling pleural catheter
  - Surgical pleurodesis

Indwelling Pleural Catheter



Indwelling Pleural Catheter





Empyema

- Drain and antibiotics
- Intrapleural thombolytics (MIST 2) - Alteplase and Dornase alpha BD for 3 days
- Surigcal decortication (VATS or Thoracotomy)

Surgical pleurodesis

Haemothorax

- Evacuate and refer

Chylothorax

- Low fat diet with medium chain fatty acids
- Octreotide
- TD ligation by VATS or other surgical approach

Hepatic Hydrothorax

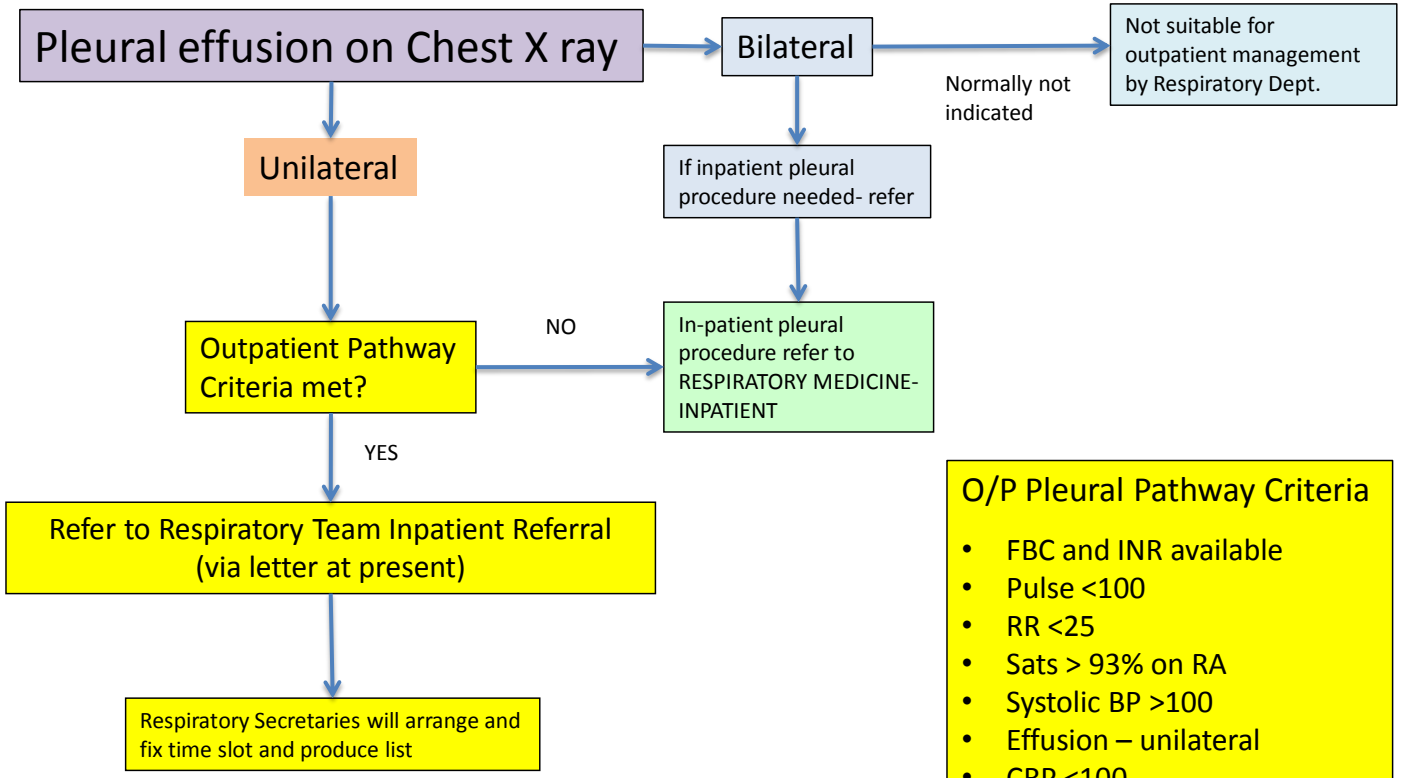
- Diuretics and fluid/electrolyte balance best
- Draining the fluid can lead to massive protein loss and haemodynamic destabilisation
- If palliative – IPC might be inserted
- CPAP has a role

- CLOTTING!!!!

Summary for Effusion management

- CxR
- US tap
- Analyse
- If not clear do a CT
- Might need a biopsy
  - Medical Thoracoscopy, surgical VATS or CT guided
- Treat cause
- Consider pleurodesis or IPC if chronic.

The management of Pleural effusions from Clinic or Ambulatory Care



O/P Pleural Pathway Criteria

- FBC and INR available
- Pulse <100
- RR <25
- Sats > 93% on RA
- Systolic BP >100
- Effusion – unilateral
- CRP <100
- CURB 65 <3
- No acute OT/PT concerns
- App with 72 h for infection
- or 2 weeks for other dx

Common questions on drains

- How quickly can fluid be drained?
  - 1.5 litres (or less if coughing) and then close for 4 hours
    - Cough
    - Bleeding
    - Oedema –rare and responds well to CPAP
- Follow up- 6 weeks post drain removal
- Flight – 1 week after demonstrated complete resolution

Talc or Doxy for Pleurodesis

- Talc- more effective , but risk of ARDS approx 1%
- Doxy safer, but less effective

Pleurodesis or IPC

- Not clear- patient choice
- IPC is a pragmatic solution (and may also cause pleurodesis)

Mesothelioma

- A neoplasm of the mesothelial surface of the pleural (also peritoneum, pericardium)
- Strong causative link with Asbestos exposure
  - Also Simian Virus 40 exposure
  - Radiation therapy
  - Carbon nanotubes used in nano-electronics.

Mesothelioma

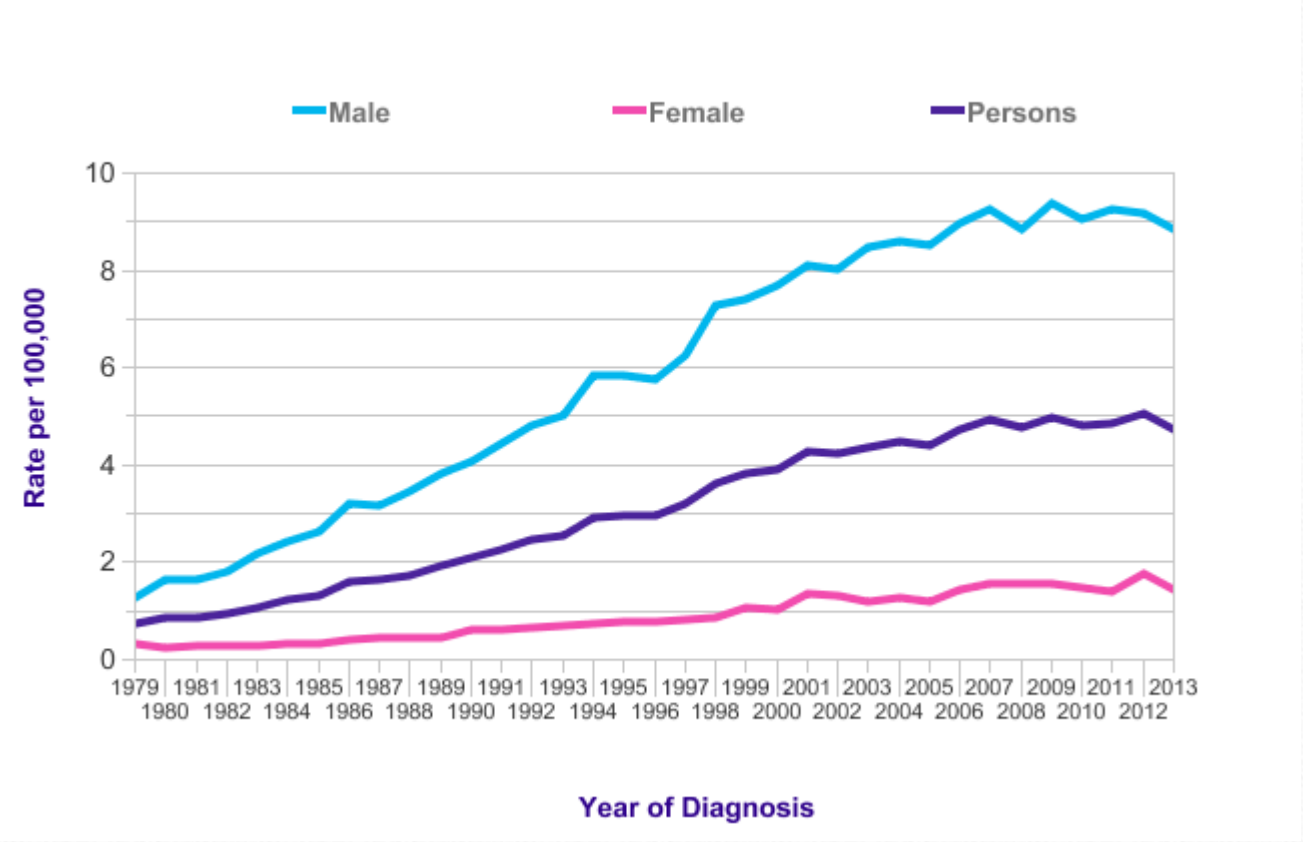
- Crocidolite (blue, short, straight) most carcinogenic (or just best penetrating)
- Long latency between exposure and disease development

Epidemiology

- UK- 2,500 new cases per year
- Incidence likely to peak in the next few years and then start declining
- It is felt that there is a baseline rate (and we will probably reach that in about 2040-2050)

Mesothelioma (C45): 1979-2013

European Age-Standardised Incidence Rates per 100,000 Population, by Sex, Great Britain



Mesothelioma

- Diagnosis by biopsy/ tissue
  - Histology
  - Biomarkers- SMRP (soluble mesothelin related peptides)
  - Osteopontin not so specific
  - Calretin, Keratin, WT1 protein

Mesothelioma

- Staging by TMN into I, Ia and b, II, III and IV
- Median survival 12 months
- Chemotherapy at present only clear treatment with good evidence base (Cisplatin plus Pemetrexed). Extends survival by up to another 12 months.
- New therapies coming through (immunotherapy, new chemo etc)
- Focal radiotherapy only needed if larger drain.
- Medical pleurodesis or IPC

Asbestos and the lung

- Benign pleural plaques
  - No need to FU
- Diffuse pleural thickening
- Mesothelioma
- Asbestosis
- Associated with increased risk of cancer (especially with smoking)

Asbestos and compensation

- 3 years from being told of a compensable diagnosis to initiate a claim
  - Make sure you raise this and document it (to avoid any claims for losses against you!)
- Mesothelioma, Asbestosis and Diffuse Pleural thickening can be considered for compensation

PNEUMOTHORAX

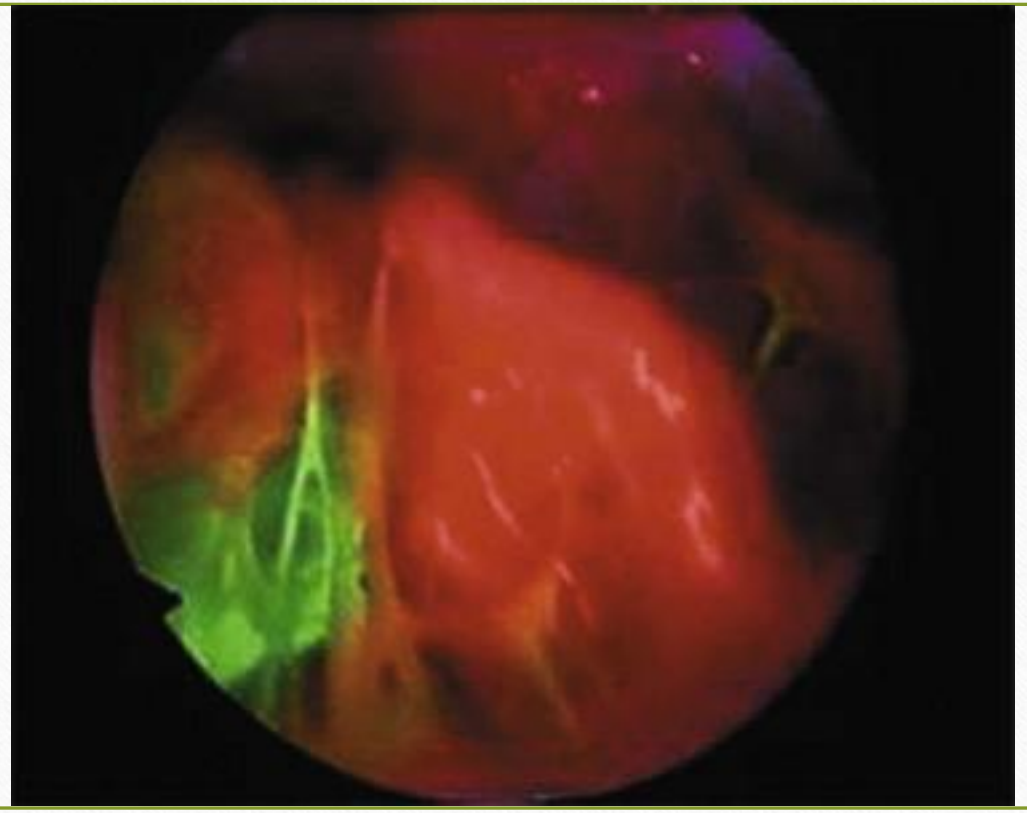
Definition

- Air in the pleural space
  - Spontaneous
    - Primary
    - Secondary
  - Traumatic
  - Iatrogenic

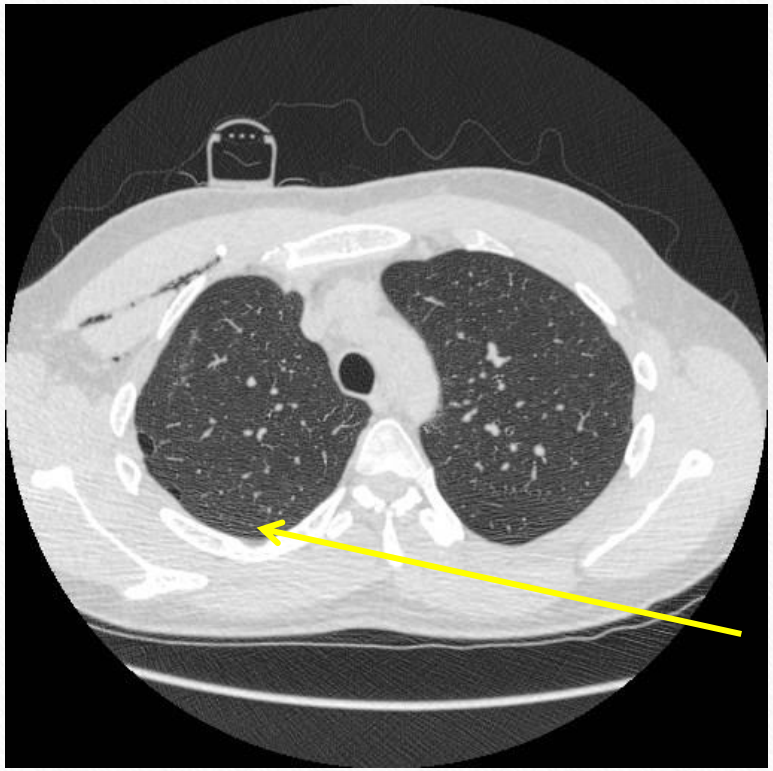
Pathophysiology

- Rupture of subpleural blebs, bullae or weaknessess in the lung parenchyma.
- Early Emphemsematous like changes are seen in most patients if looked for, even in young non smokers (so the term primary might well be spurious)
- Young smokers often have small subpleural cysts seen on CT
- Fluorescein enhanced auto fluorescence thoracoscopy has demonstrated increased visceral pleural porosity in patients with apparent primary pneumothoraces.

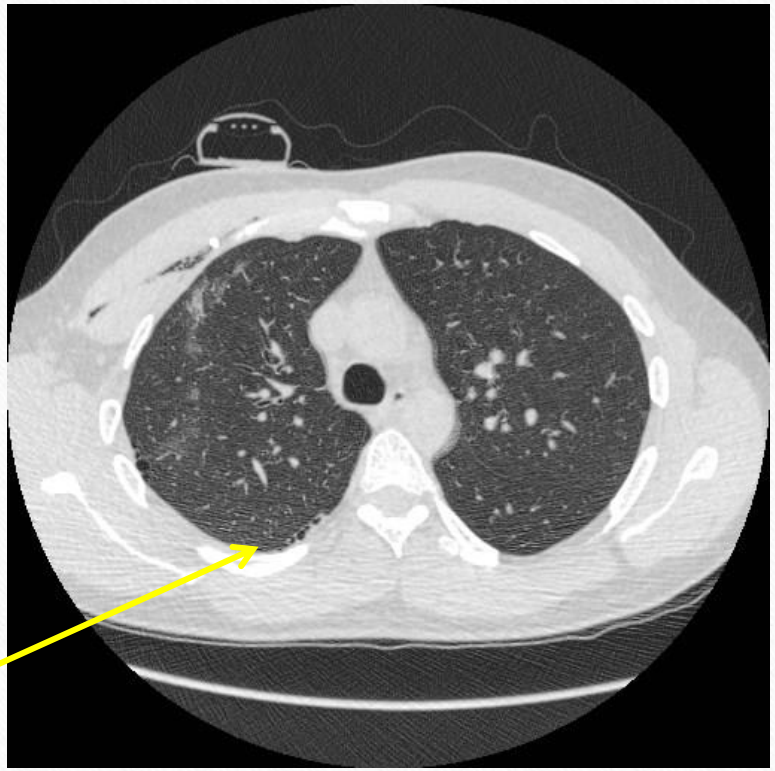
Fluorescein enhanced auto-fluorescence thoracoscopy

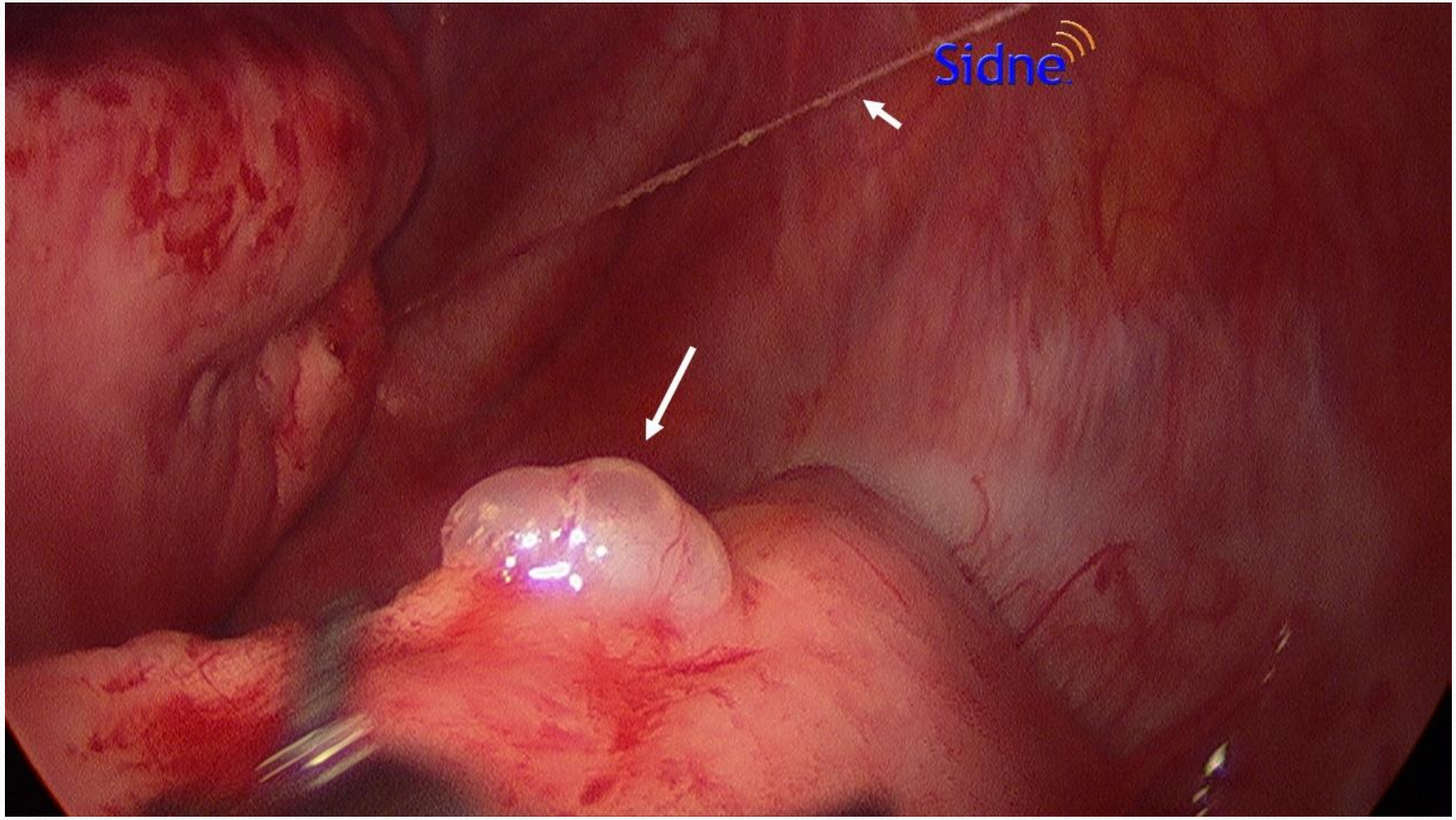


Early emphysematous changes



Subpleural bulla




Sidne

Spontaneous Pneumothorax

Primary

- Under 50
- < 20 pack year history of smoking
- No underlying lung disease

Secondary

- Smoker > 20 pyh
- COPD
- Cancer
- Bronchiectasis
- Catemenial (endometriosis)
- ILD
- Any lung condition at all

Causes to remember of exams

- Cystic lung disease
  - Cystic Fibrosis
  - Pulmonary Langerhans Cell Histiocytosis
  - Lymphangioleiomyomatosis (proliferation in the lymphatics)

Epidemiology

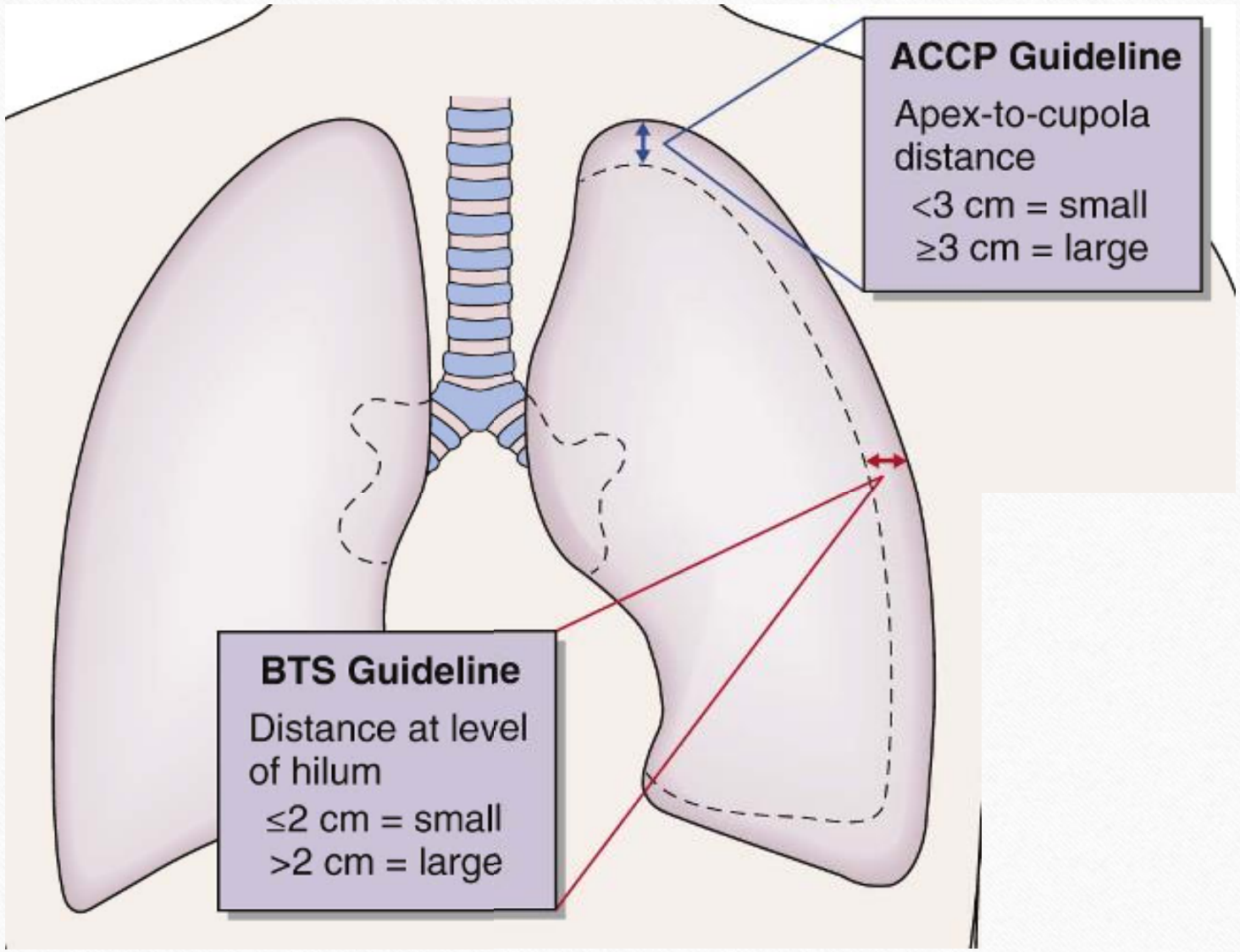
- Spontaneous Pneumothorax
  - Primary
    - 12/ 100,000 population/ year (men) 2/ 100,000 population/year (women)
  - Secondary
    - 6/100,000/year (men) 2/100,000 / year (women)
    - Risk in heavy smokers >100 fold
- Risk X 7 5-10 cigarettes per day, X 21 10-20 and X 100 in heavy smokers

Clinical features

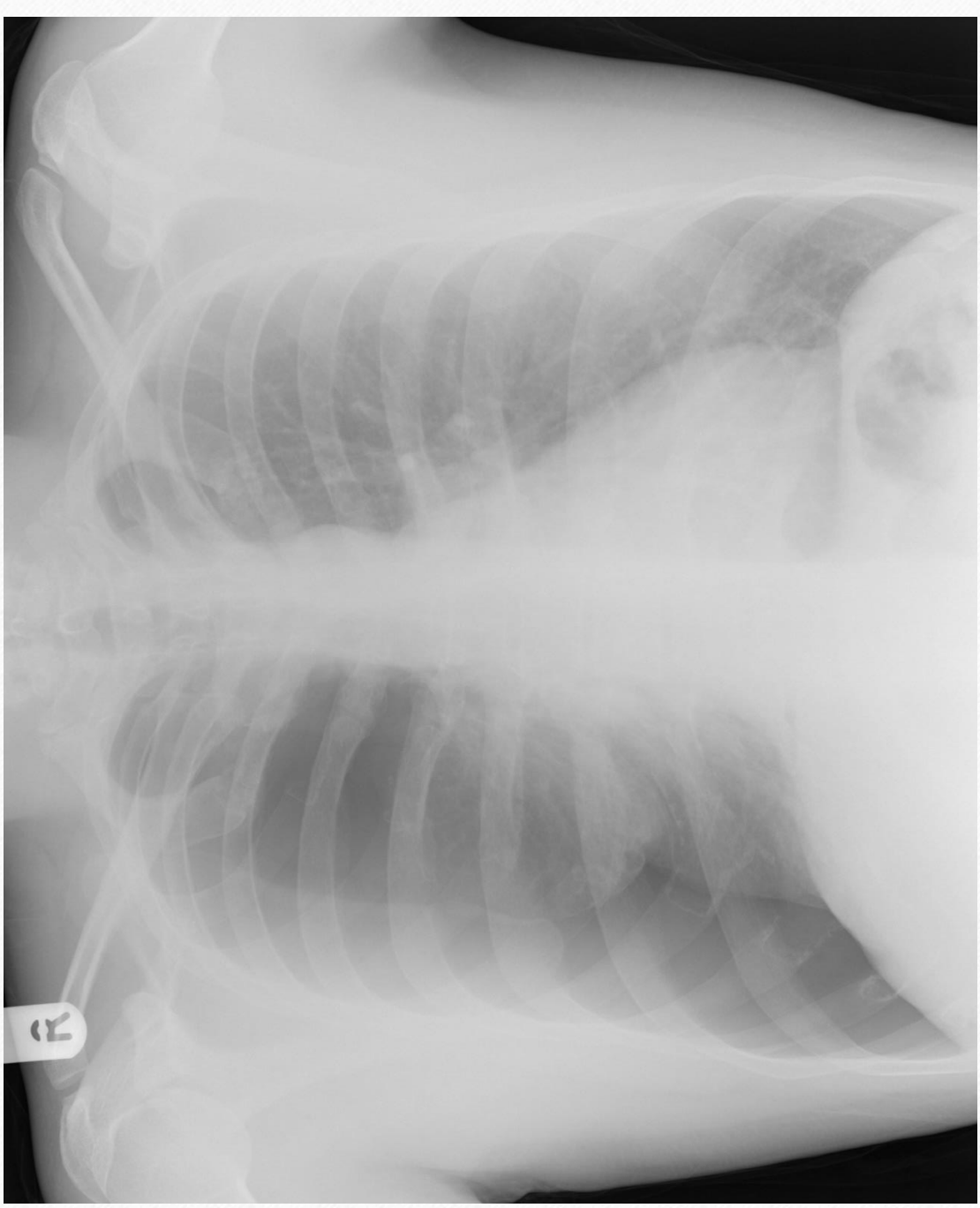
- Pain
- SOB
- Tightness
- Examination findings nil if mild
- Might find
  - Reduced BS
  - Mediastinal shift
  - Hyper-resonant

Diagnosis

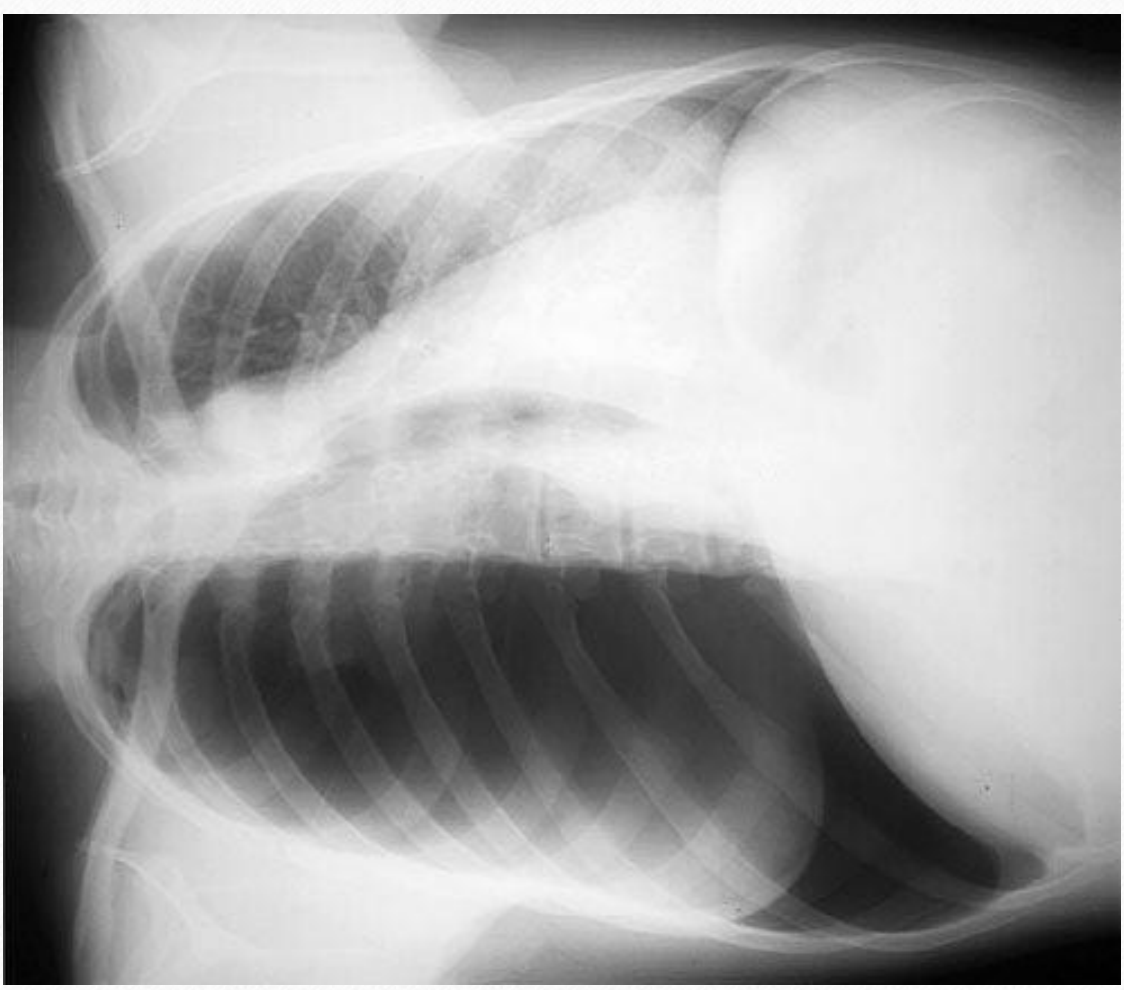
- Chest X-ray
  - Normal PA full inspiration film
  - Expiratory films no more sensitive
- CT scanning (Gold standard)
  - % ptx as $100-(100X (\text{diameter of deflated lung})^3/(\text{diameter of hemithorax})^3)$
  - More common to estimate on CxR - > 2cm at hilum = >50% collapse


ACCP Guideline
Apex-to-cupola distance
<3 cm = small
≥3 cm = large
BTS Guideline
Distance at level of hilum
≤2 cm = small
>2 cm = large

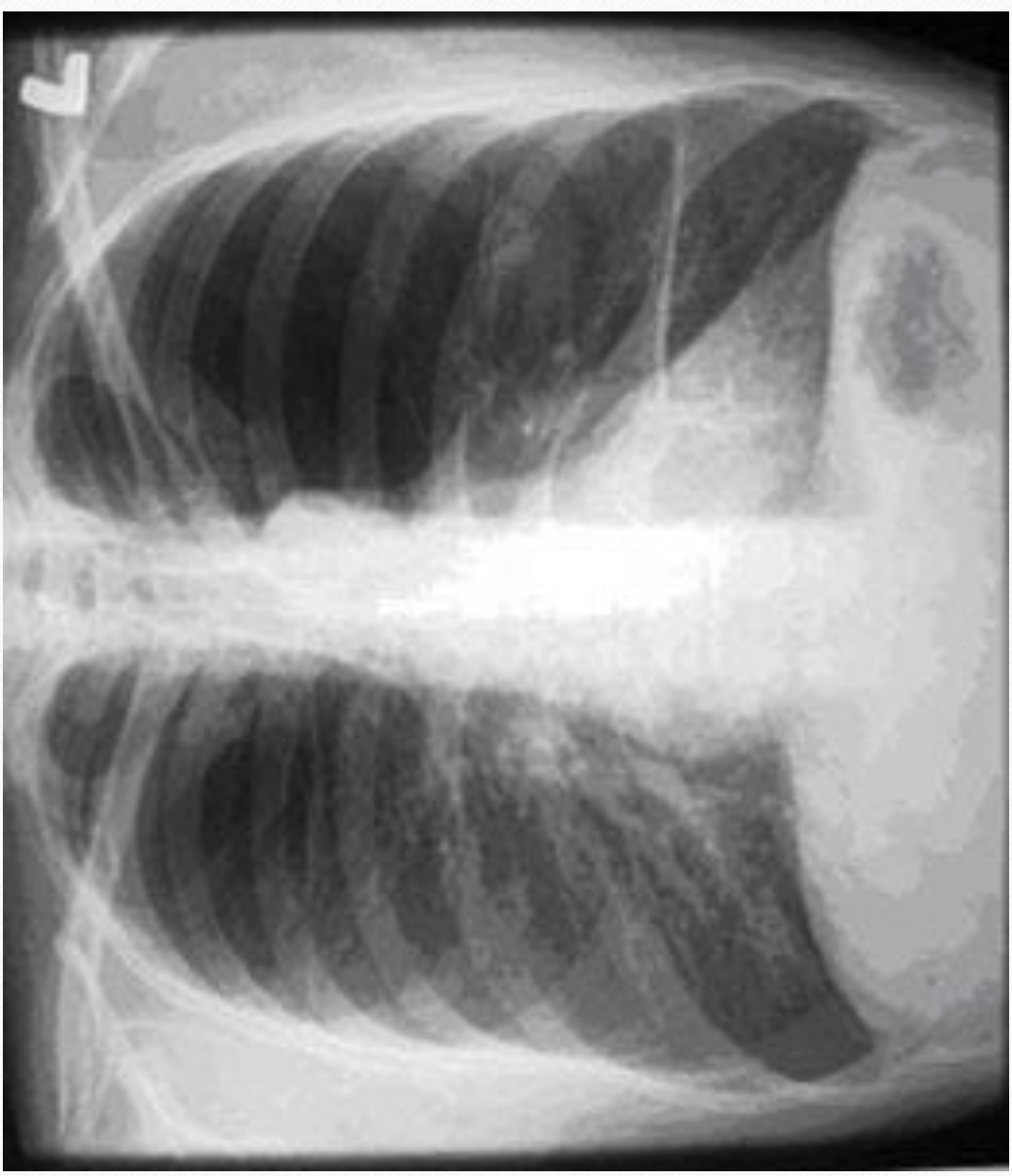
Simple Pneumothorax



Tension Pneumothorax



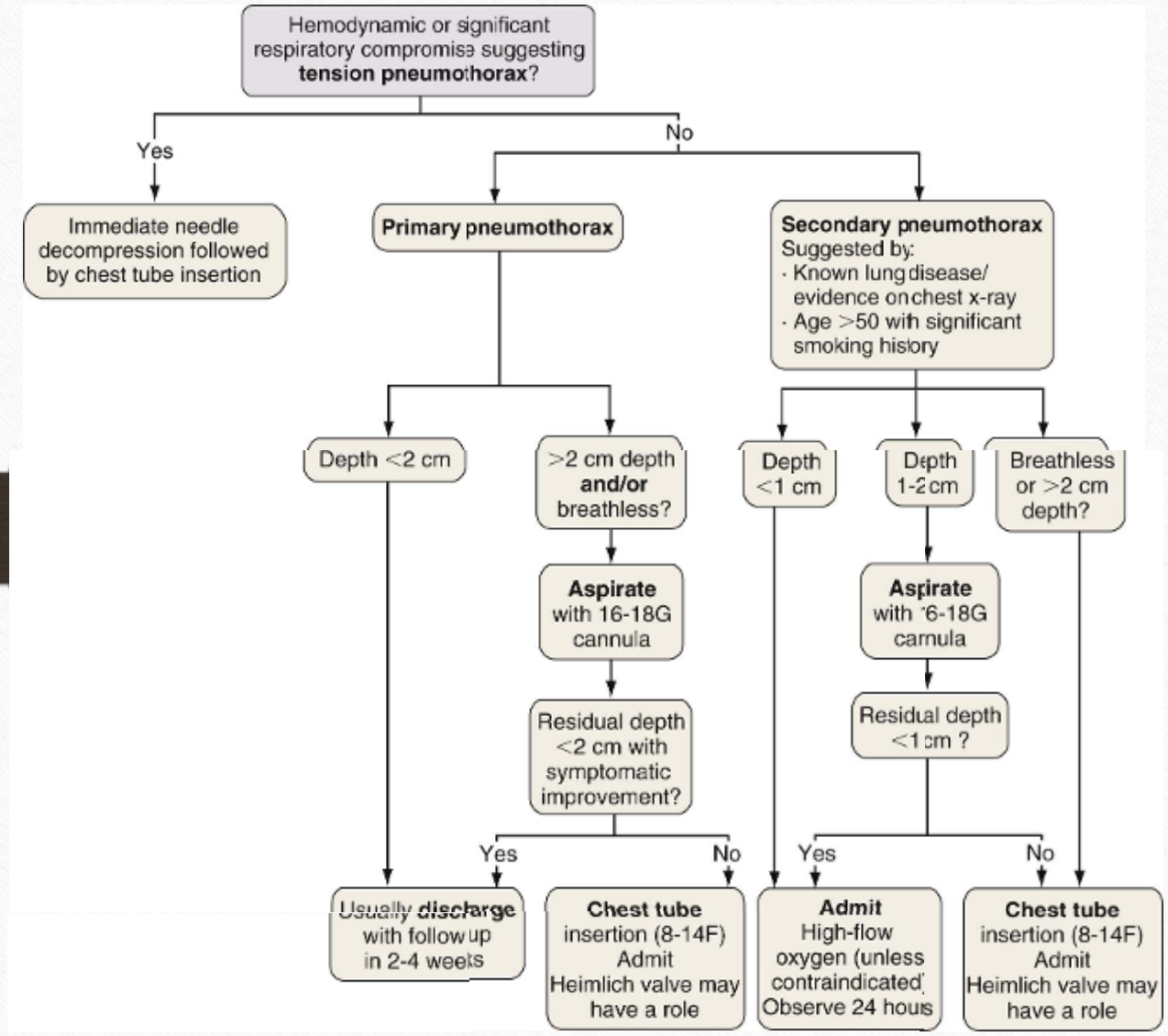
Beware Big Bulla



Management options

- Observe
- Aspirate air
- Venflon 2nd ic space mid clavicular line (tension ptx)
- Ambulatory pleural vent
- Chest drain + / - suction
- Surgery

Pneumothorax management



Risk of recurrence

- Primary Ptx
  - 40% 5 year risk of recurrence
  - Avoid scuba diving
  - Higher in smokers
  - Surgical procedure if high risk pass times or occupation
  - If EELC on CT- ? Surgery???? → RAMPP trial secondary outcome

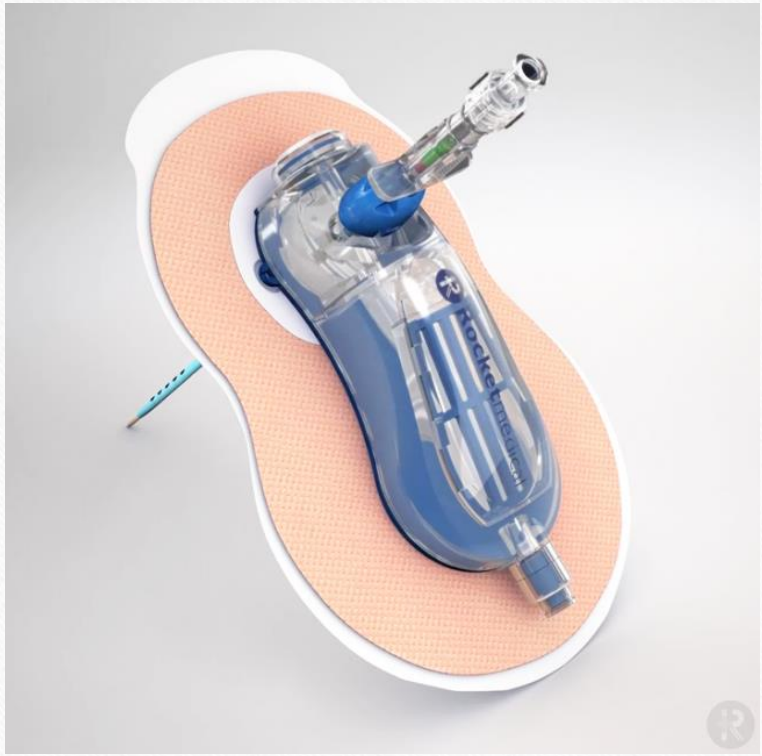
Risk of recurrence

- Secondary Ptx
  - Risk v high
  - Advise a definitive procedure
    - Medical pleurodesis
    - VATS and surgical pleurodesis

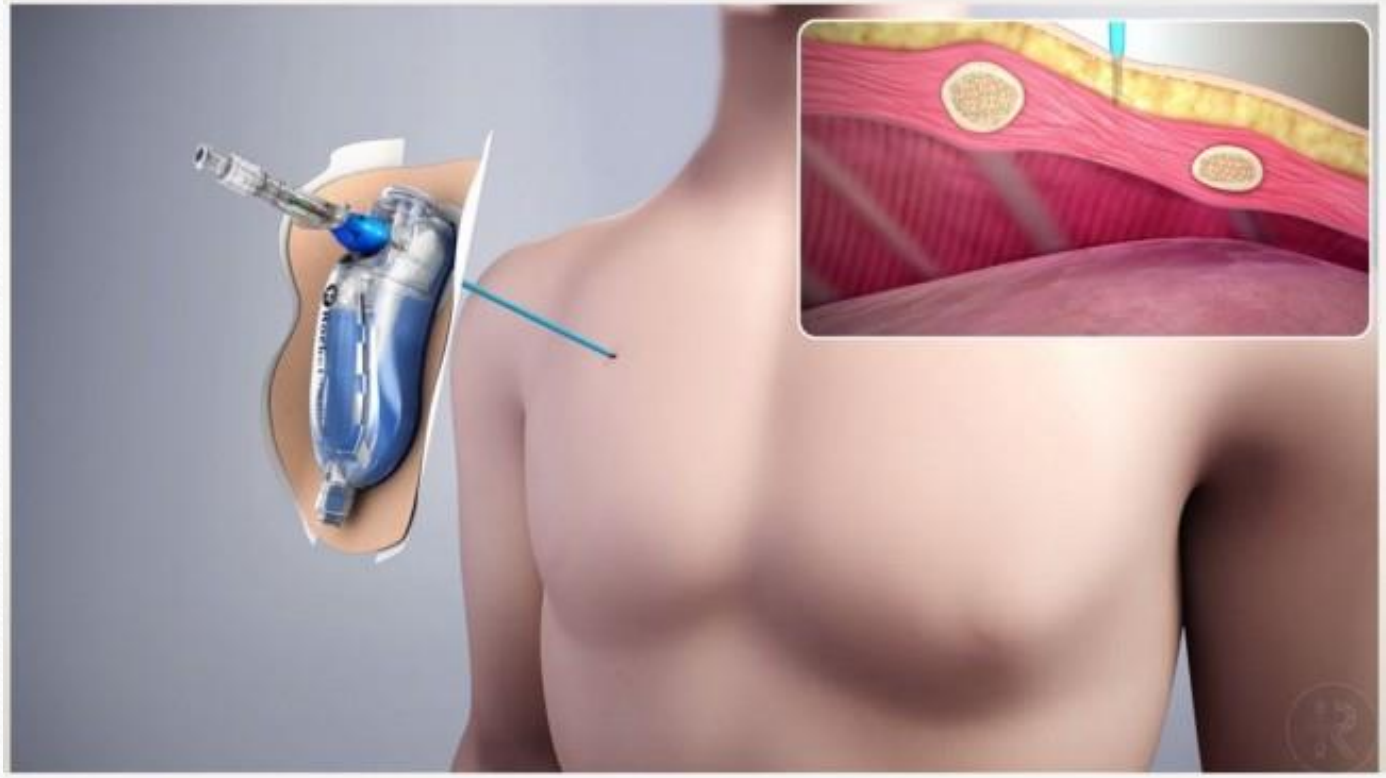
When can I fly?

- 1-2 weeks after documented resolution

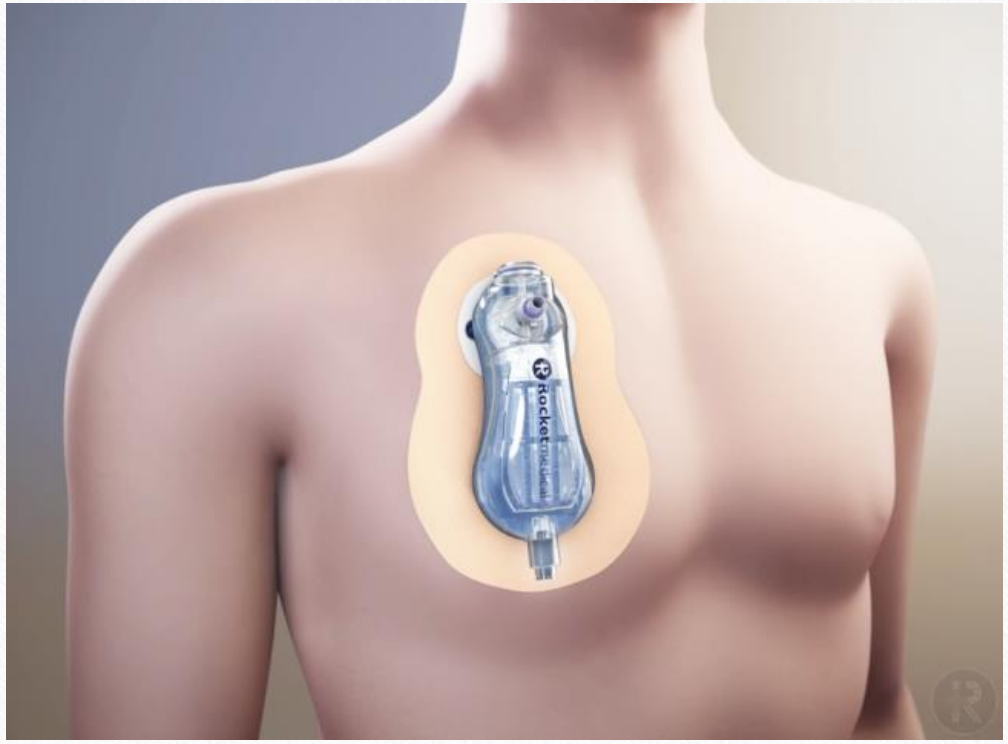
Ambulatory management- pleural vent



Pleural vent



Pleural vent



Getting signed off for pleural procedures

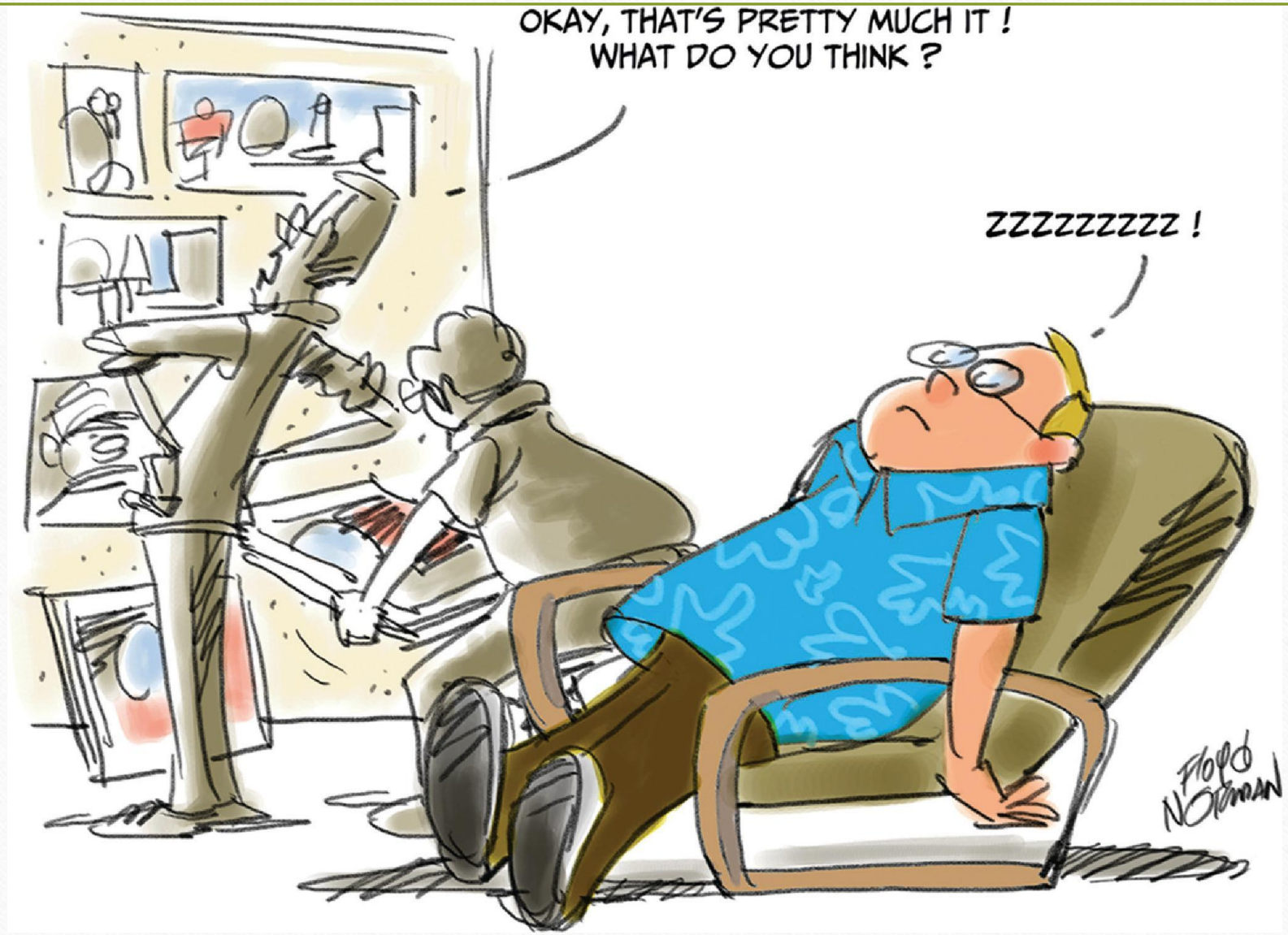
All procedures

- At least 5 procedures performed or observed in simulation
- 2 DOPS signing off competence

For procedures with effusions

- Need US sign off
  - 20 – observations
  - 20 - normal chest scans
  - 20 – abnormal chest scans
  - 20 procedures performed under direct US guidance
  - Thoracic US course

  - KEEP A LOG BOOK!


OKAY, THAT'S PRETTY MUCH IT !
WHAT DO YOU THINK ?
ZZZZZZZZZ !
FLOYD NORMAN