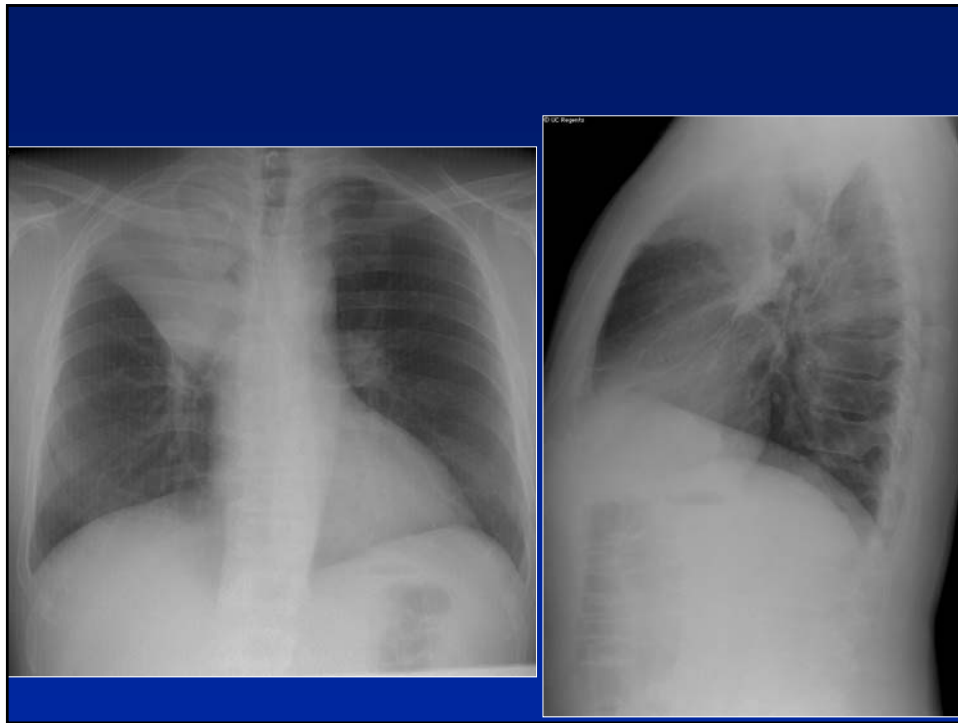
A background image of the Seattle skyline at sunset, with the Space Needle and other buildings silhouetted against a warm orange and red sky.

Lung Opacity: Atelectasis, Consolidation, Ground Glass Opacity, and Mosaic Attenuation

Gautham P. Reddy, MD, MPH
University of Washington

Learning Objectives

- **Identify lobar or rounded atelectasis**
- **Describe diff dx of consolidation**
- **Discuss causes of GGO**
- **Differential mosaic from GGO**
- **Recognize head cheese appearance**

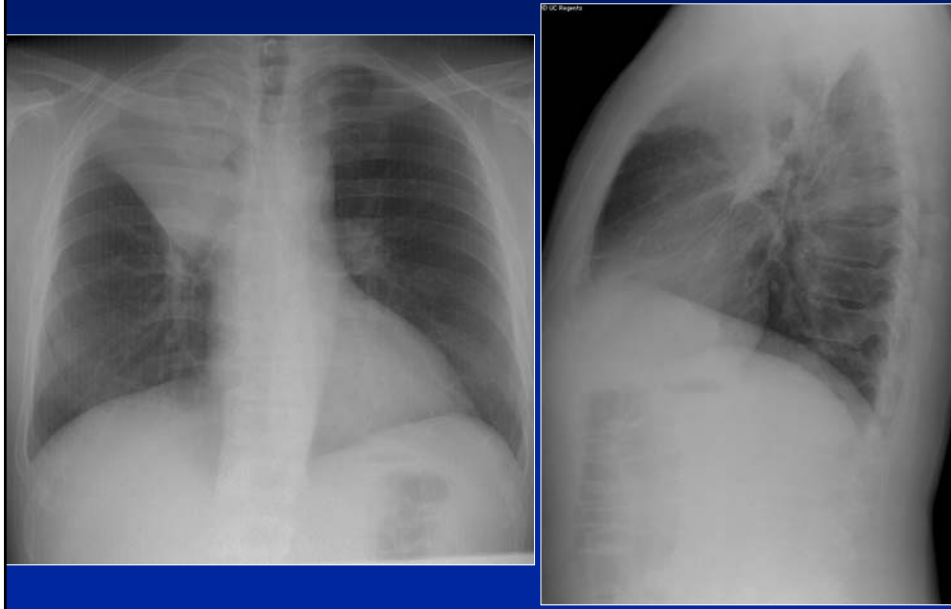


What sign is present?

1. S sign of Golden
2. Luftsichel sign
3. Hampton's hump
4. Figure 3 sign

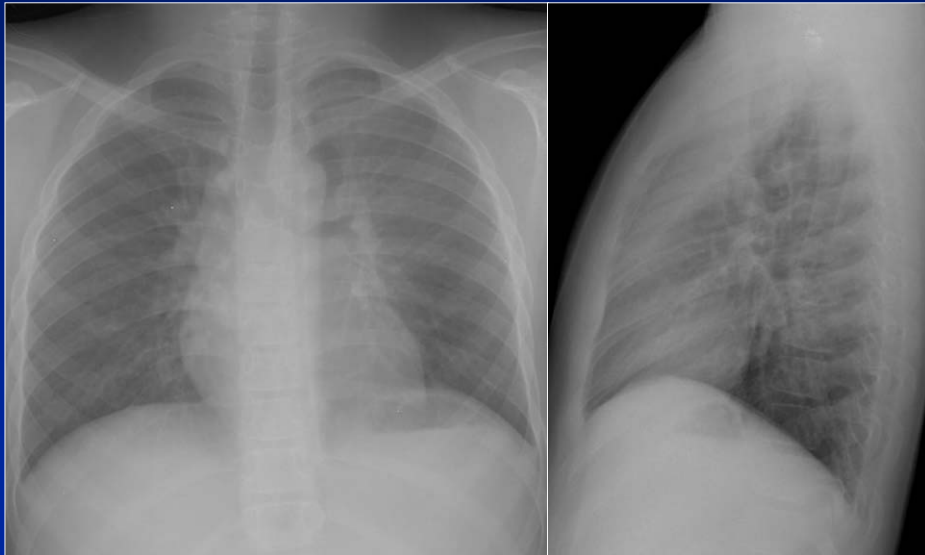


RUL Collapse



Lung Collapse

- R upper lobe: “S” sign of Golden
- L upper lobe: luftsichel sign
- RML or lingula: heart border obscured
- RML+ RLL: heart/diaphragm obscured
- Lower lobes: triangular opacity

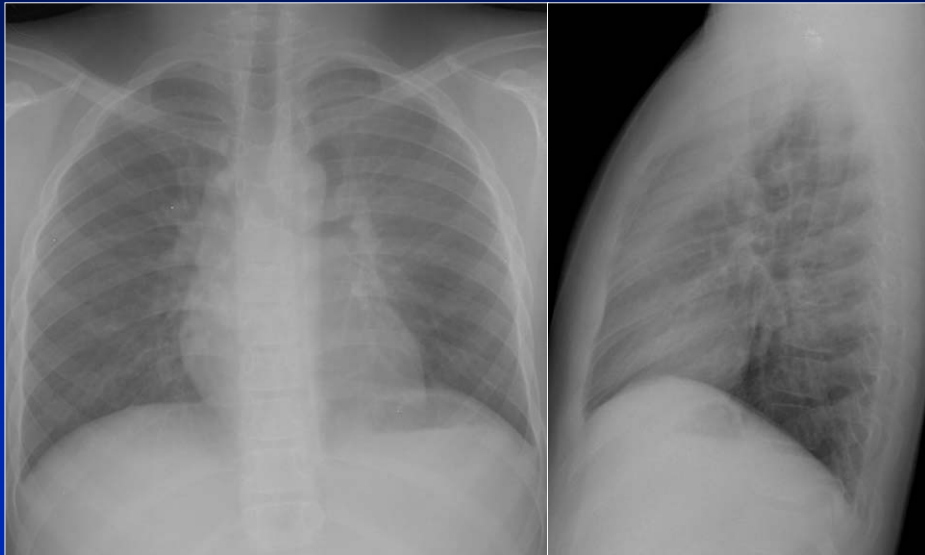


What sign is present?

1. S sign of Golden
2. Luftsichel sign
3. Hampton's hump
4. Figure 3 sign



LUL Collapse



RML/RLL Collapse



RML Syndrome

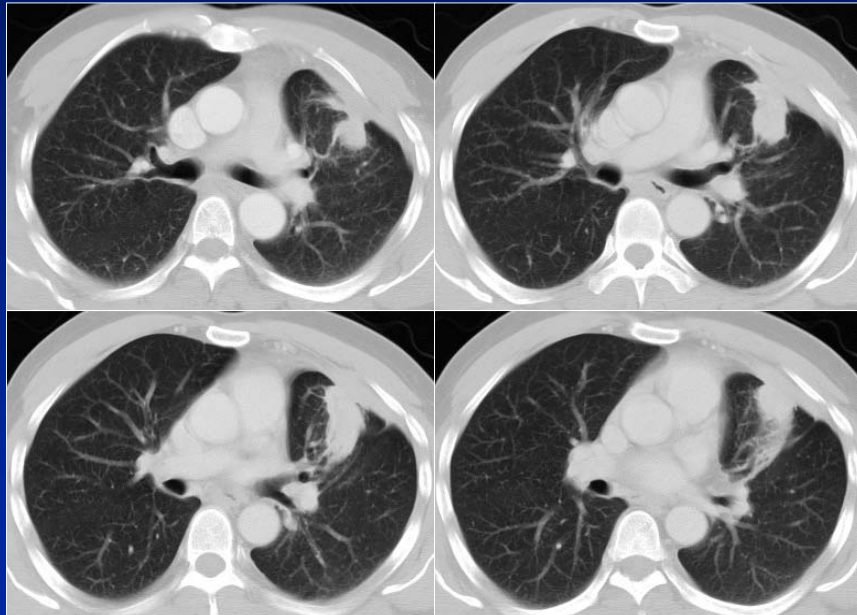


RML Syndrome



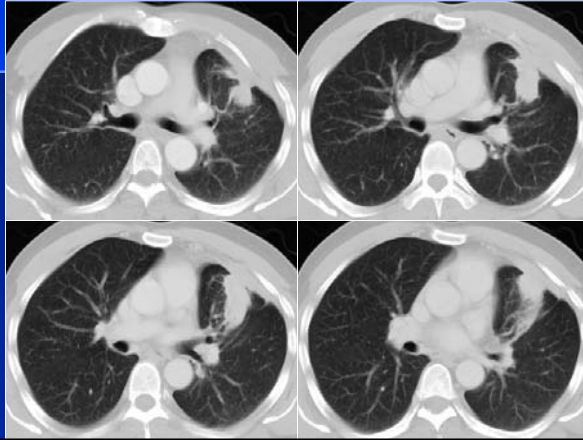
Causes of Lobar Collapse

- Tumor -- Carcinoma, carcinoid
Extrinsic compression
Endobronchial (less common)
- Mucus plugging
- Foreign body
- Broncholith (TB)
- RML syndrome
- Compressive atelectasis



What is the most likely diagnosis?

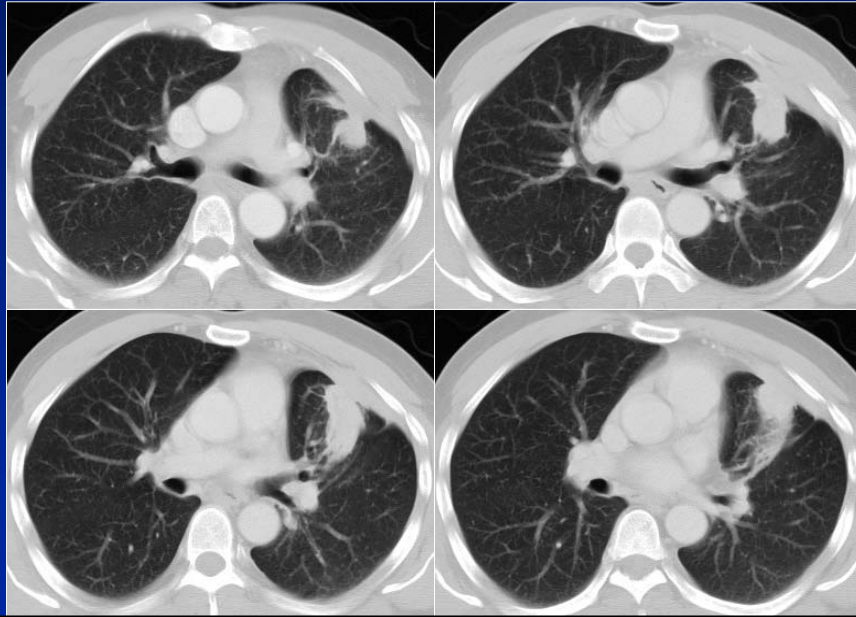
1. Lung cancer
2. Pneumonia
3. Rounded atelectasis
4. Abscess



Rounded Atelectasis

- Four features
 - Volume loss
 - Ipsilateral pleural dz (plaque, eff)
 - Broad area of pleural contact
 - Swirling vessels ("comet-tail sign")
- Associated with asbestos exposure
- Need follow-up CT to exclude cancer

Rounded Atelectasis



Increased Lung Opacity

Vessels
obscured

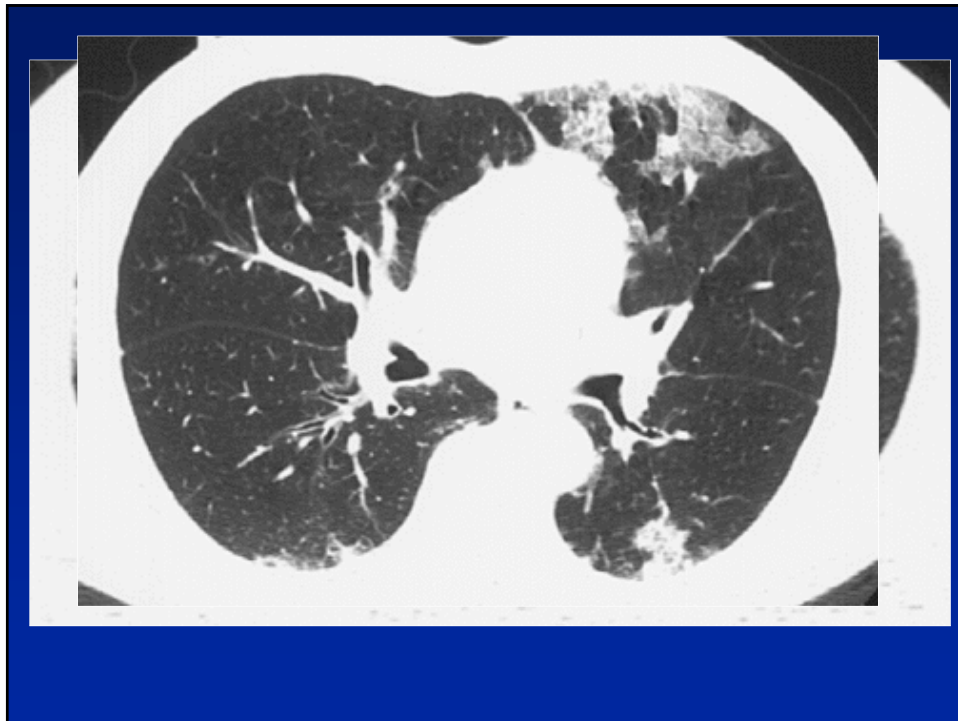


Consolidation

Vessels
not obscured

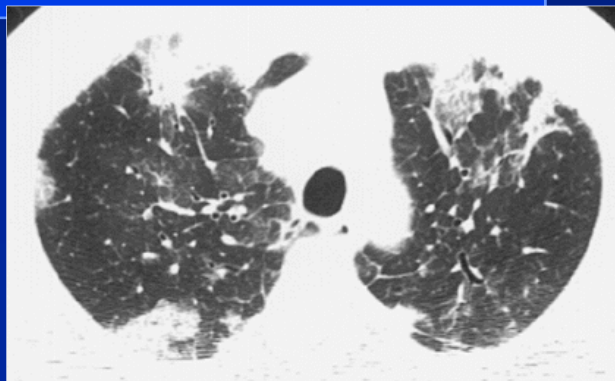


Ground-glass
opacity



What is the most likely diagnosis?

1. Pulmonary infarcts
2. Septic emboli
3. Organizing pneumonia
4. Eosinophilic pneumonia



Consolidation

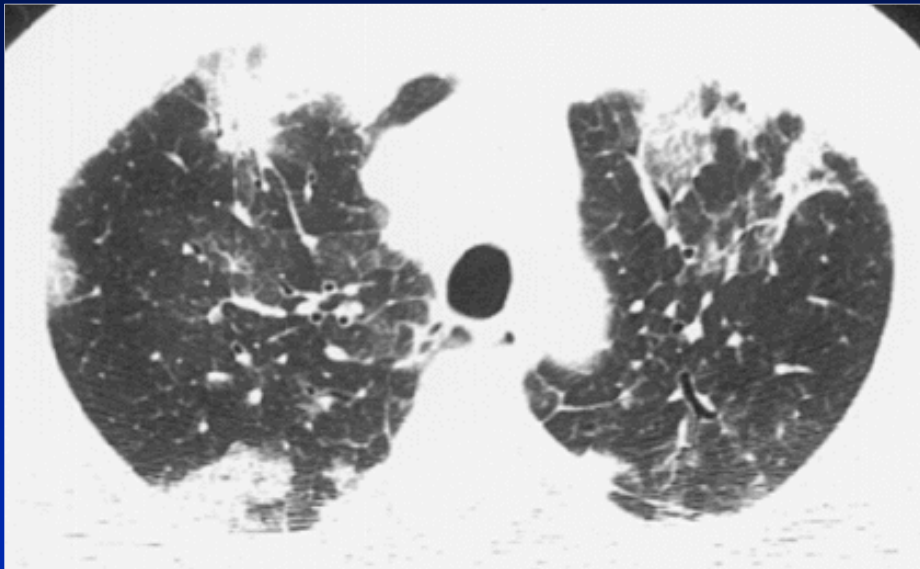
- Alveolar air replaced by:
water, blood pus, protein, cells
- Underlying vessels obscured
- If another pattern is present,
use other pattern for diagnosis

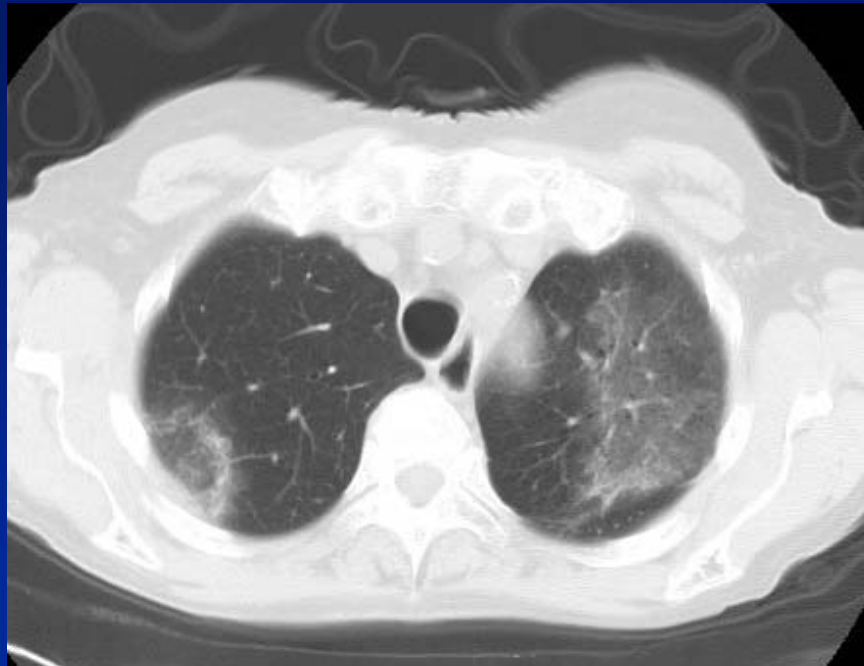
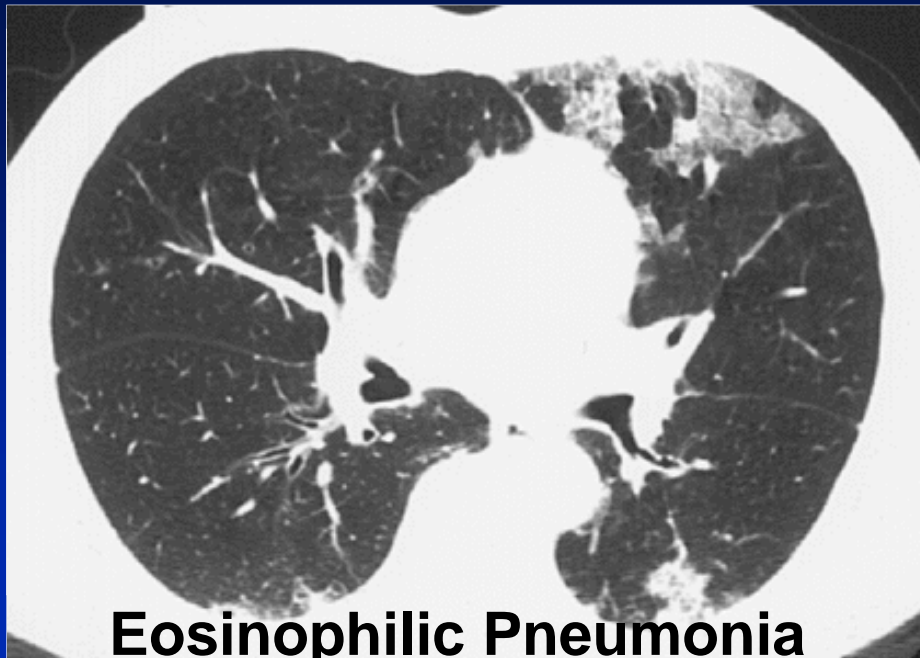
Consolidation

- Pneumonia
- Tuberculosis
- Aspiration
- Atelectasis
- Contusion
- Hemorrhage
(Plain film: consolid / CT: GGO)

Peripheral Consolidation

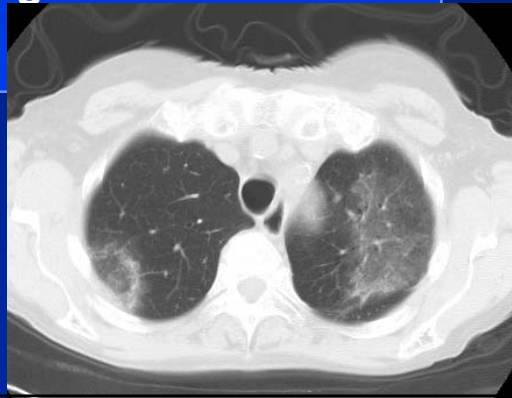
- Cryptogenic organizing pneumonia (COP)
- Chronic eosinophilic pneumonia
- Pulmonary infarct (single focus)





What sign is present?

1. Bird's nest sign
2. Atoll sign
3. Halo sign
4. Crazy paving sign
5. Sun shine

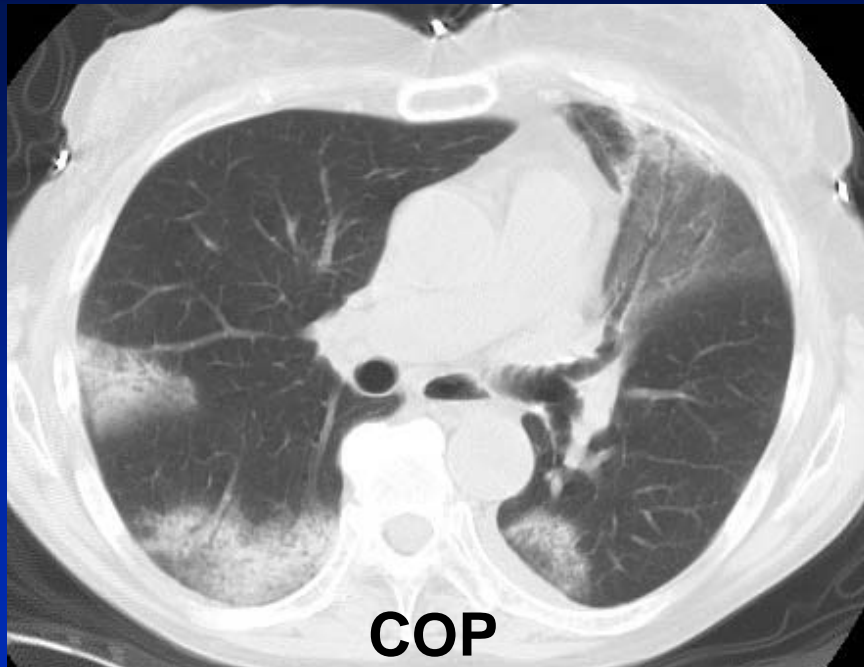


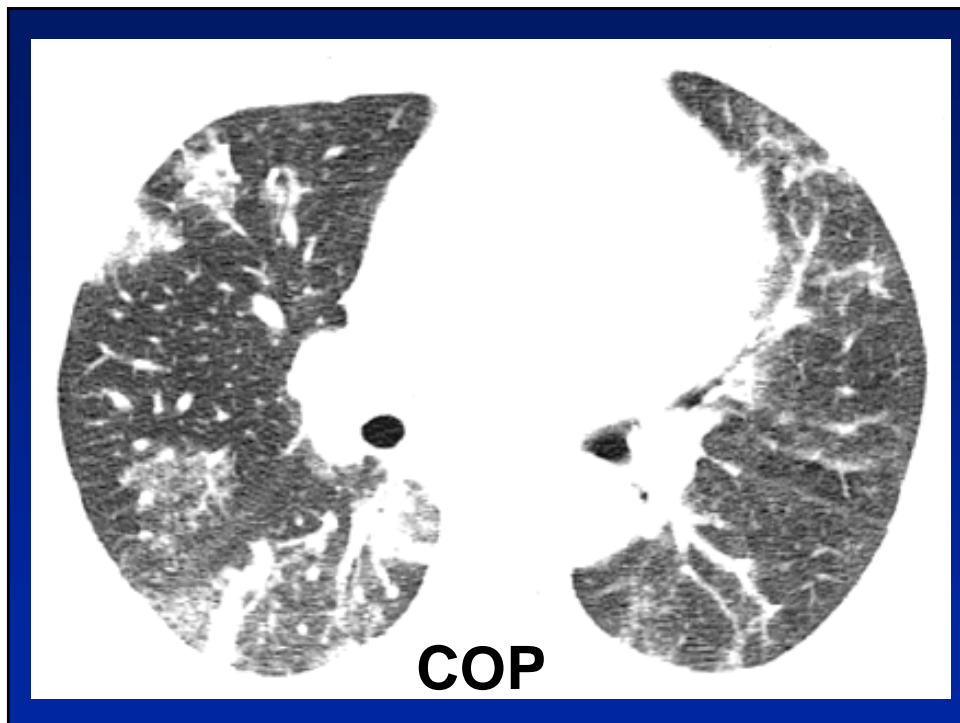
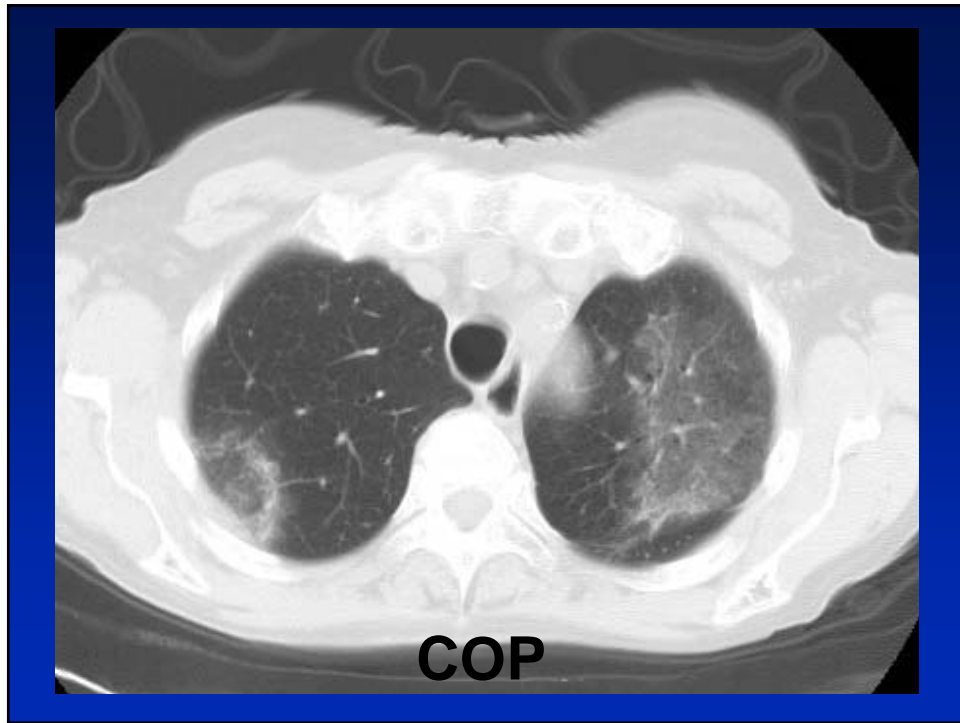
Atoll

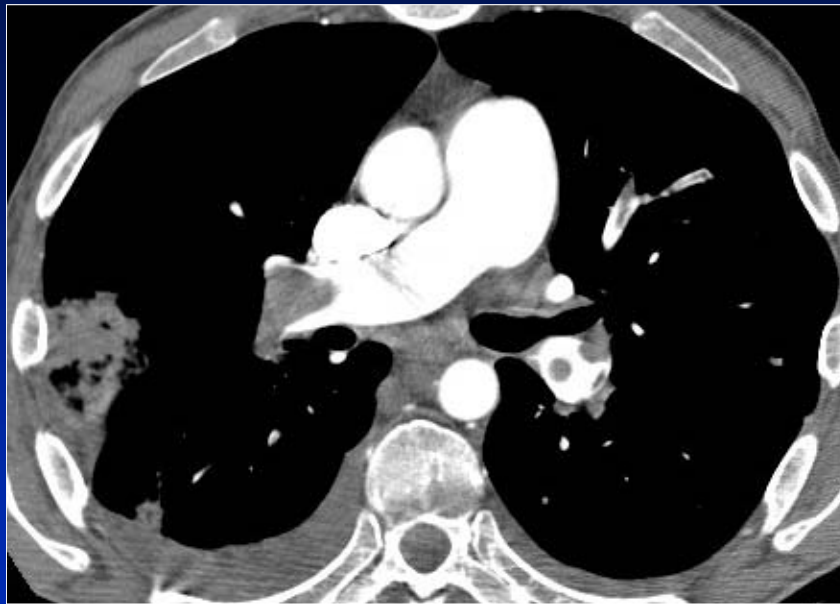


What is the most likely diagnosis?

1. Pulmonary infarcts
2. Septic emboli
3. Organizing pneumonia
4. Eosinophilic pneumonia

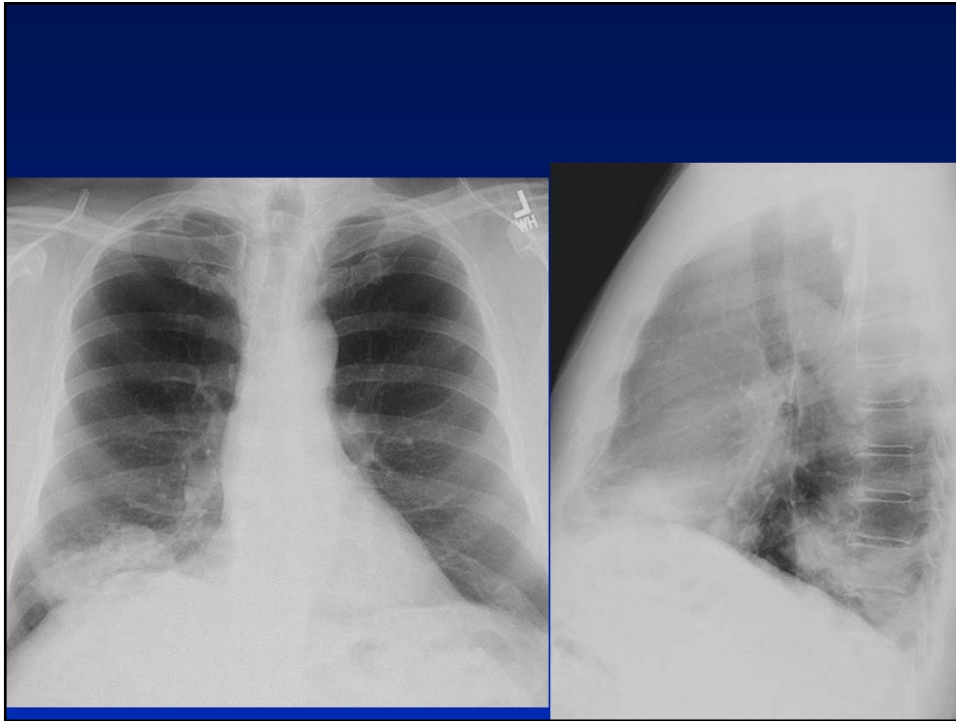






Chronic Consolidation

- Adenocarcinoma in situ
(Bronchoalveolar carcinoma)
Poss GGO on CT / false neg PET
- COP/ Eosinophilic pneumonia
Peripheral
- Lipoid pneumonia
- Hodgkin lymphoma (rare)

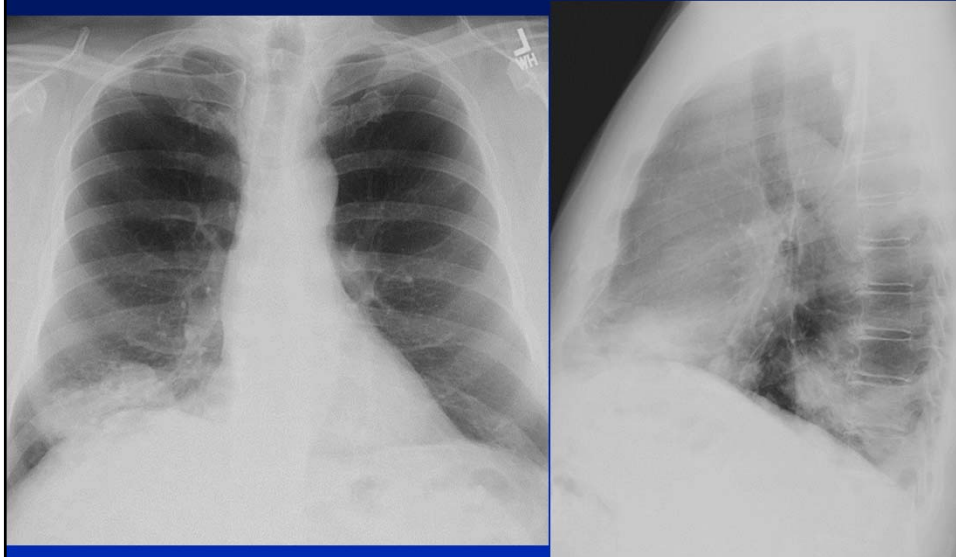


What is the most appropriate next imaging study?

1. None
2. Follow-up chest radiography
3. CT
4. PET

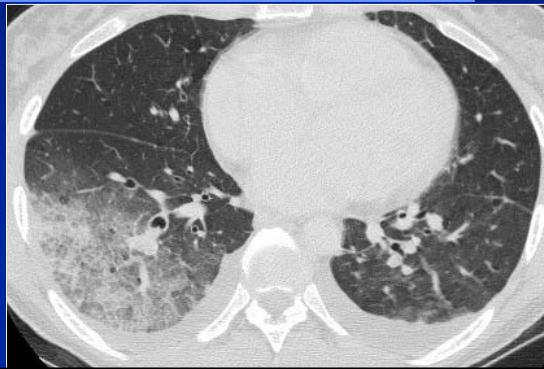


Adenocarcinoma in situ (Bronchoalveolar Carcinoma)



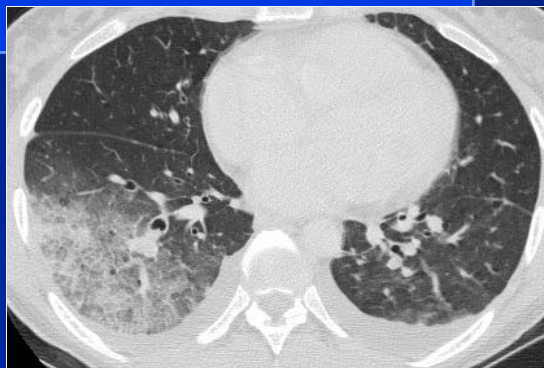
What is the predominant finding?

1. Consolidation
2. Ground glass opacity
3. Mosaic attenuation
4. Emphysema



In this patient with GPA (Wegener), what is the most likely diagnosis?

1. Alveolar hemorrhage
2. Hypersensitivity pneumonitis
3. Pulmonary edema
4. Pneumonia

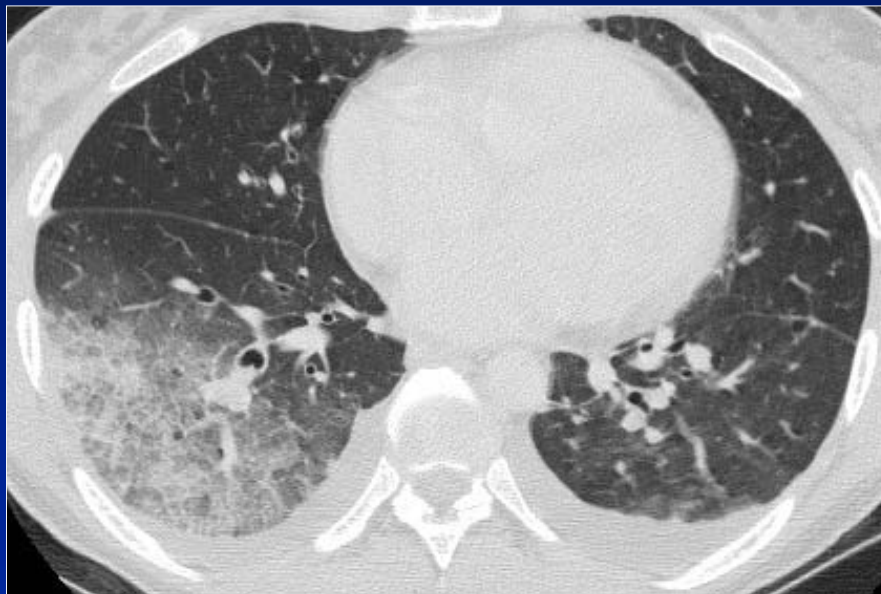
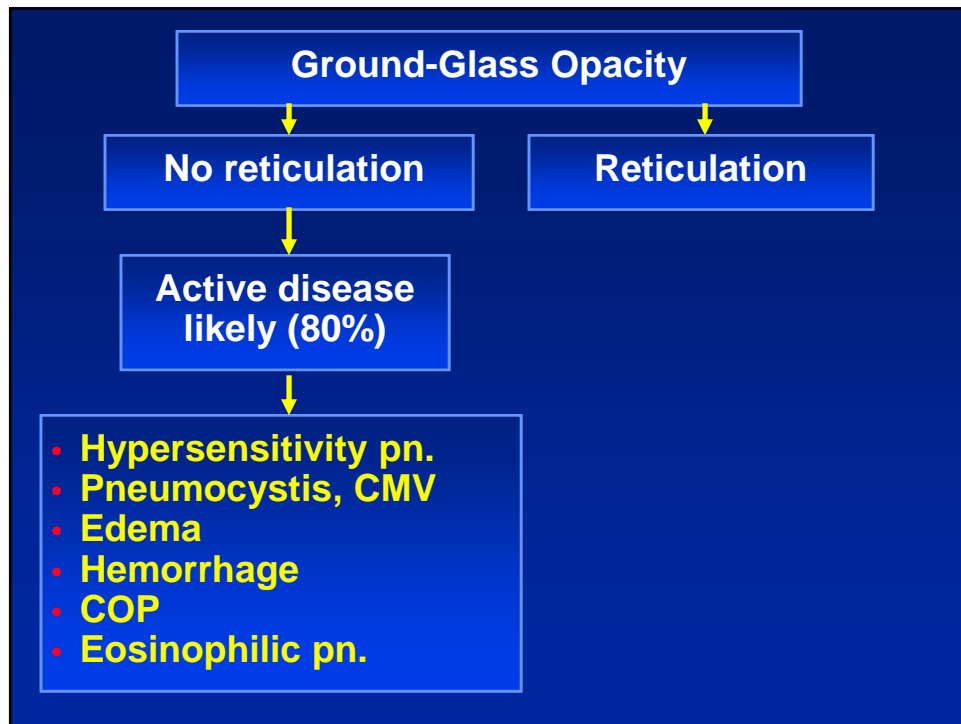


Ground Glass

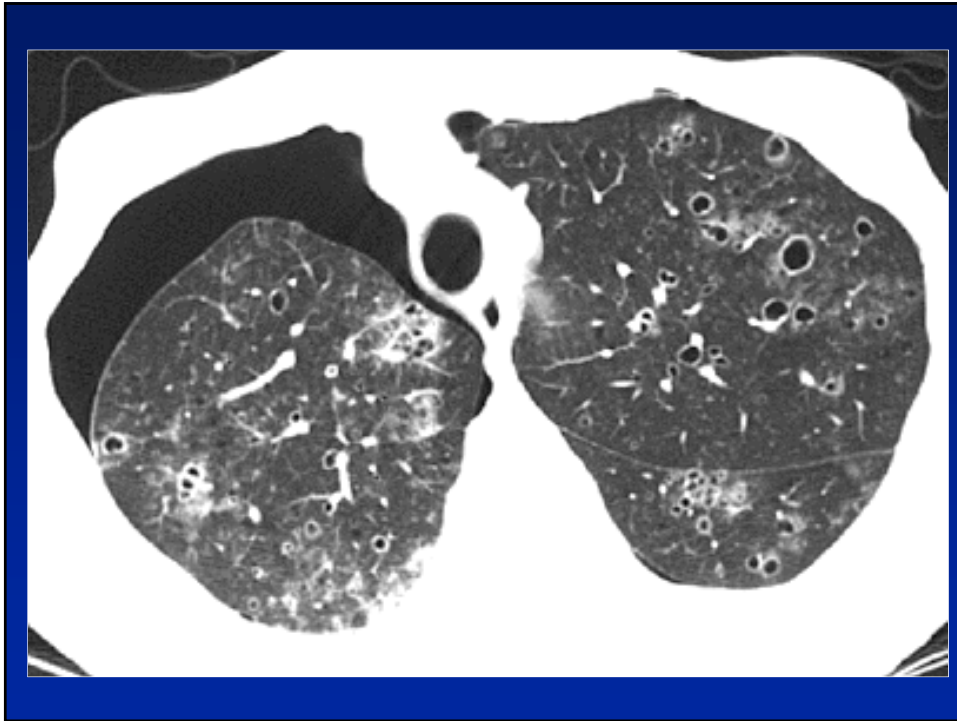


Ground-Glass Opacity

- Air space, interstitial, or mixed
- Hazy increase in lung opacity
- Underlying vessels not obscured
- Usually indicates active process
Leads to biopsy
- Fibrosis: GGO likely NOT active

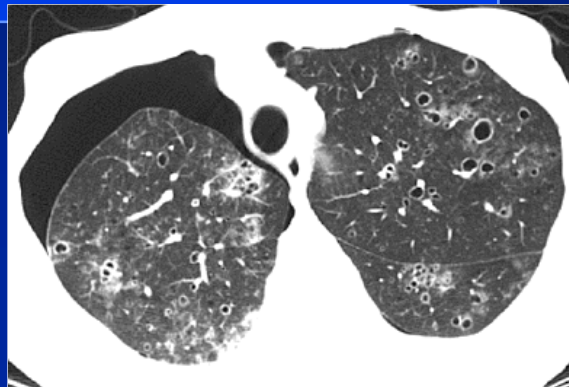


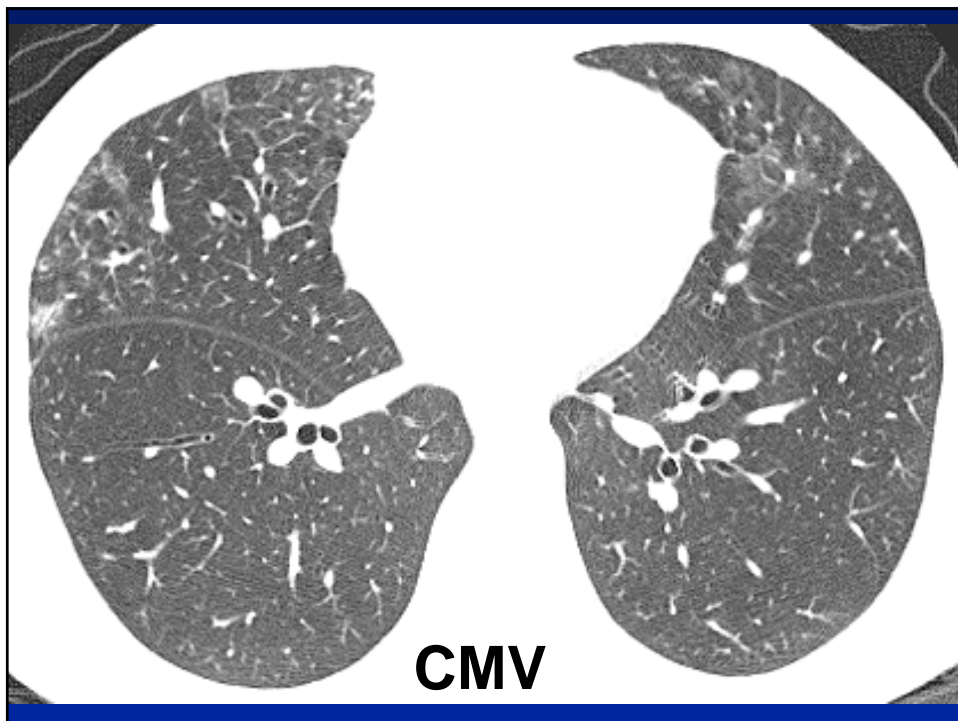
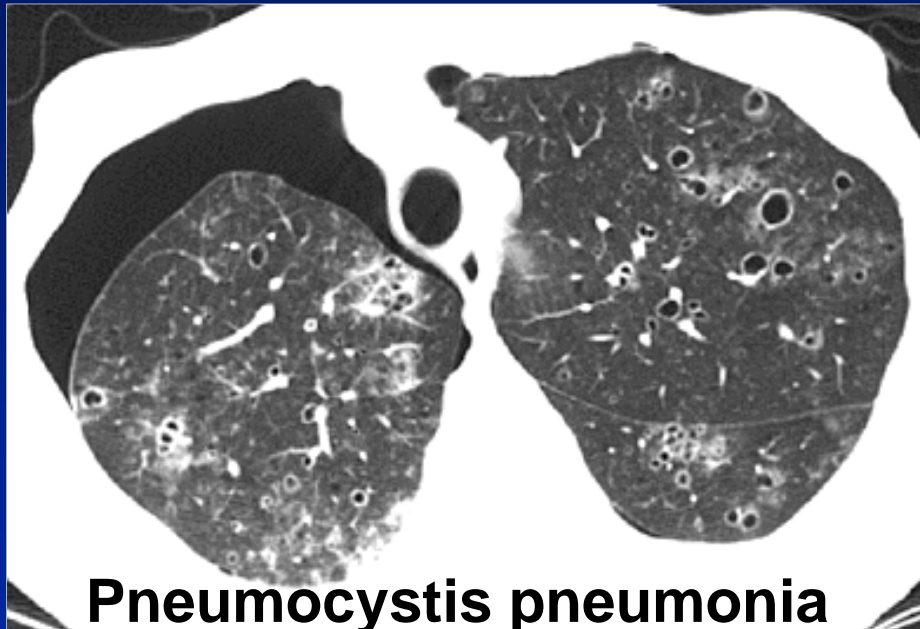
Hemorrhage

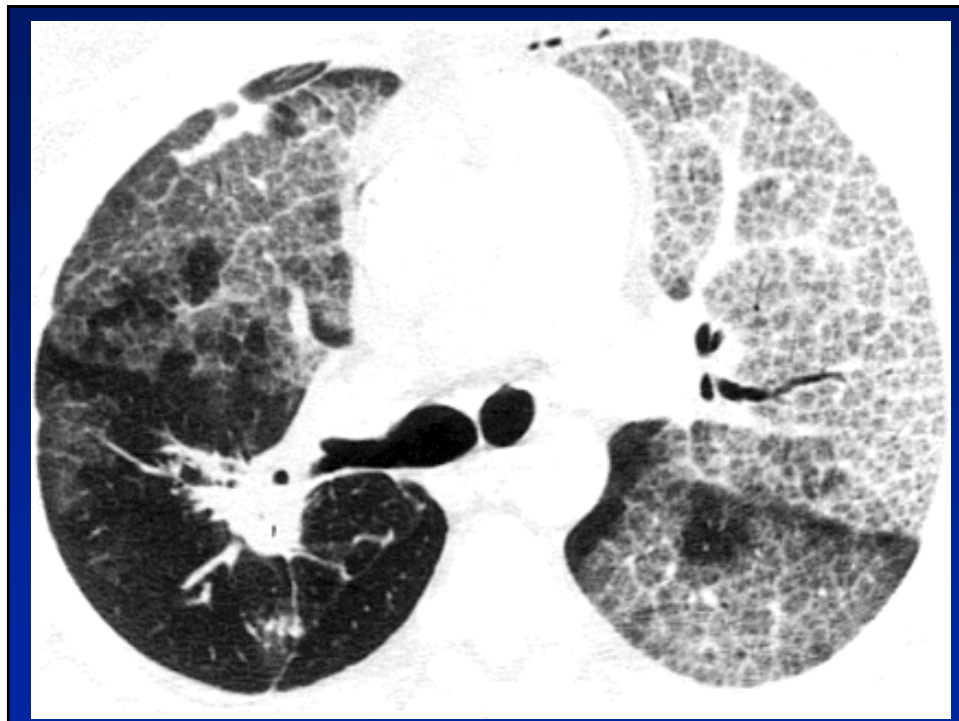
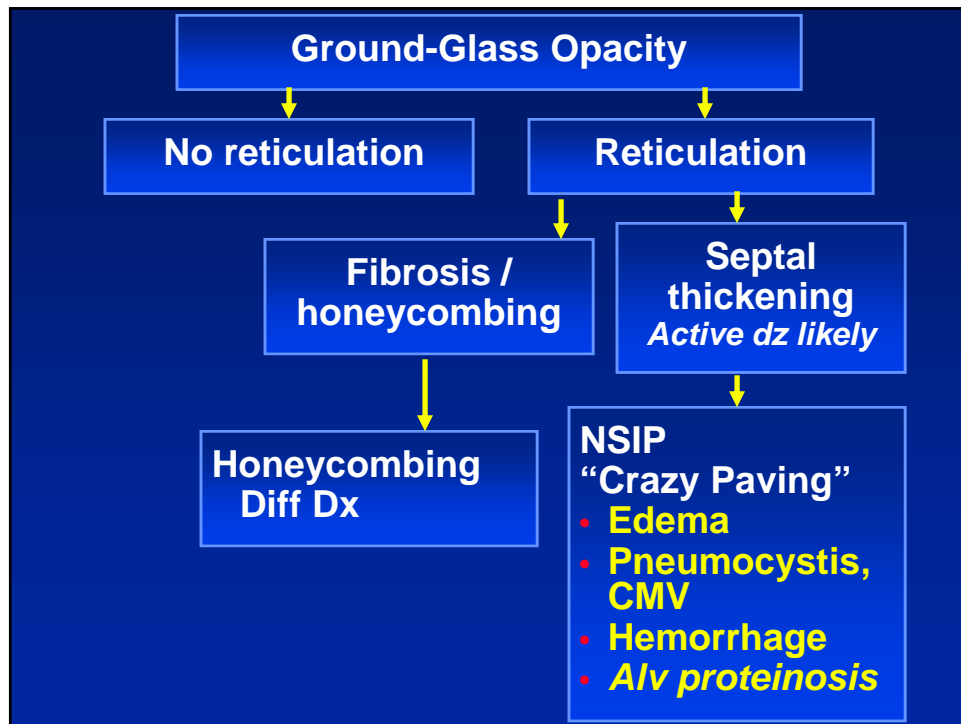


Pt is HIV+. Most likely diagnosis?

1. Alveolar hemorrhage
2. Pneumonia
3. Pulmonary edema
4. Hypersensitivity pneumonitis

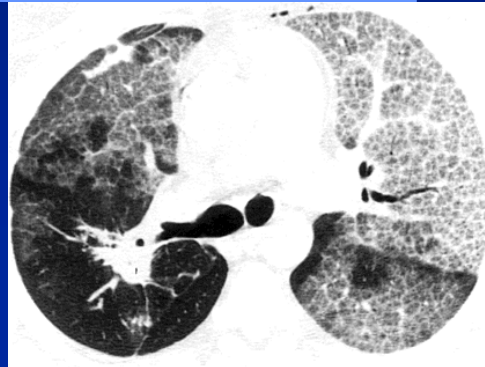






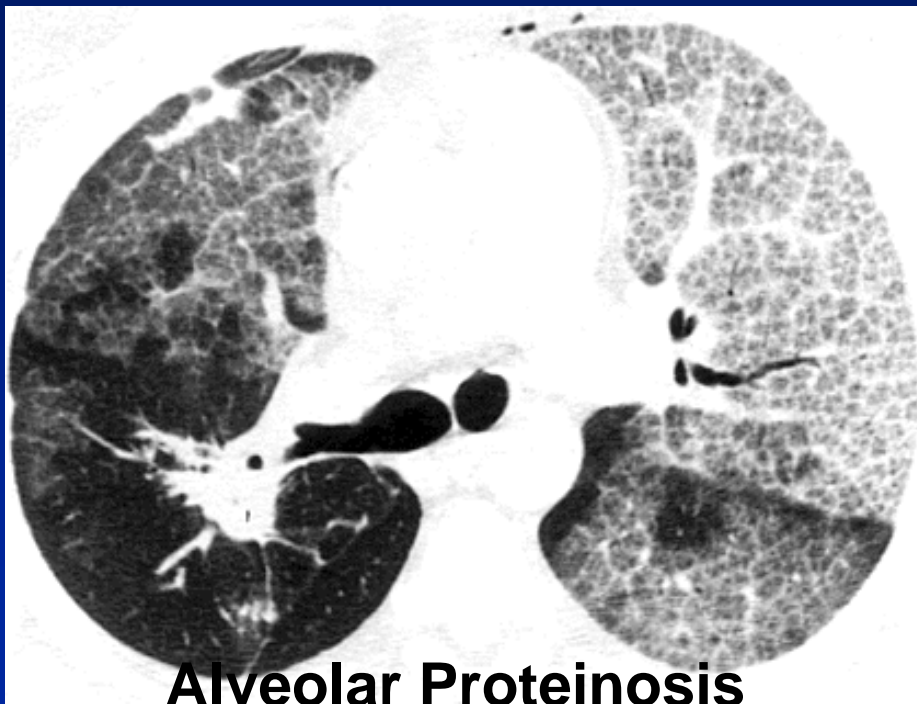
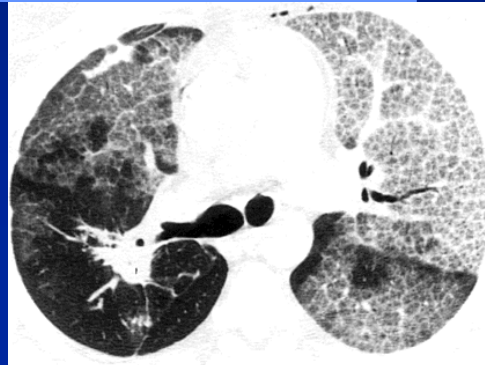
What imaging sign is seen?

1. Head cheese
2. Cheese head
3. Crazy paving
4. Sane paving

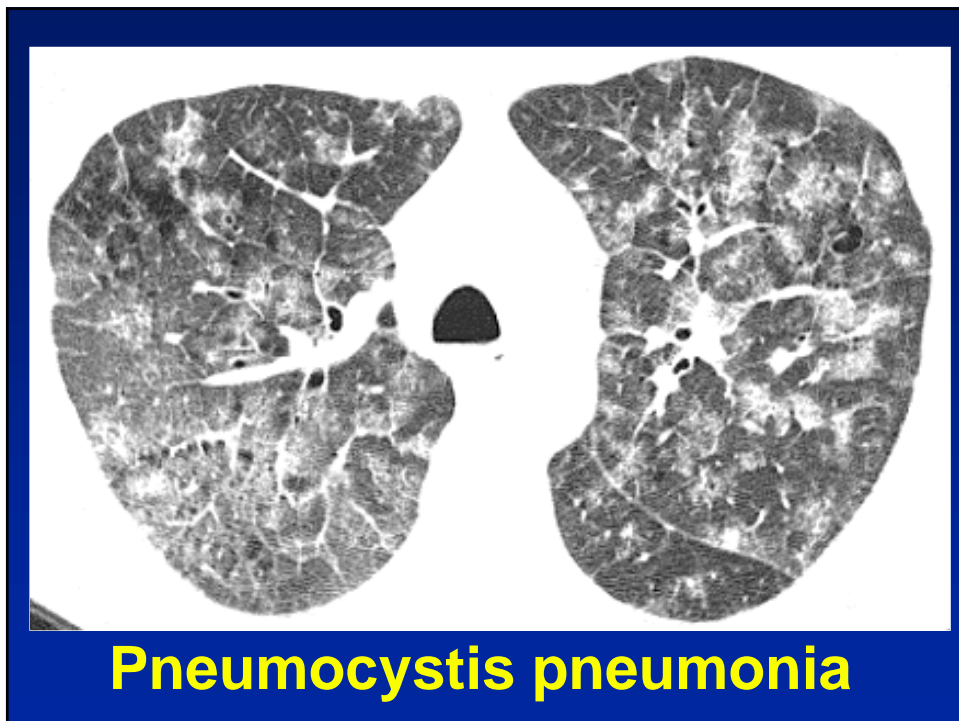
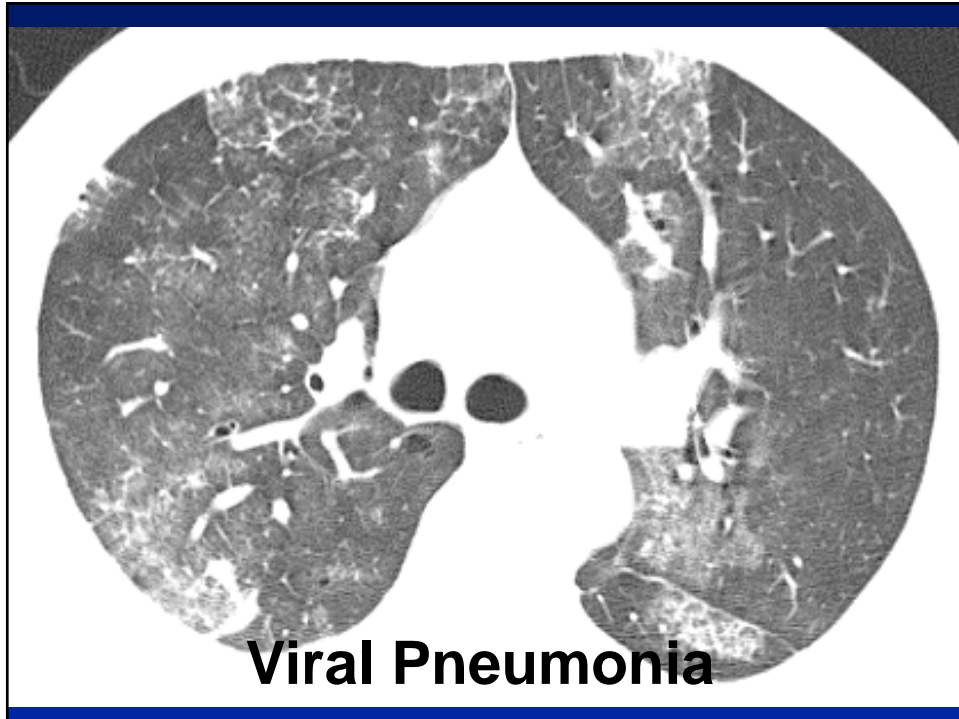


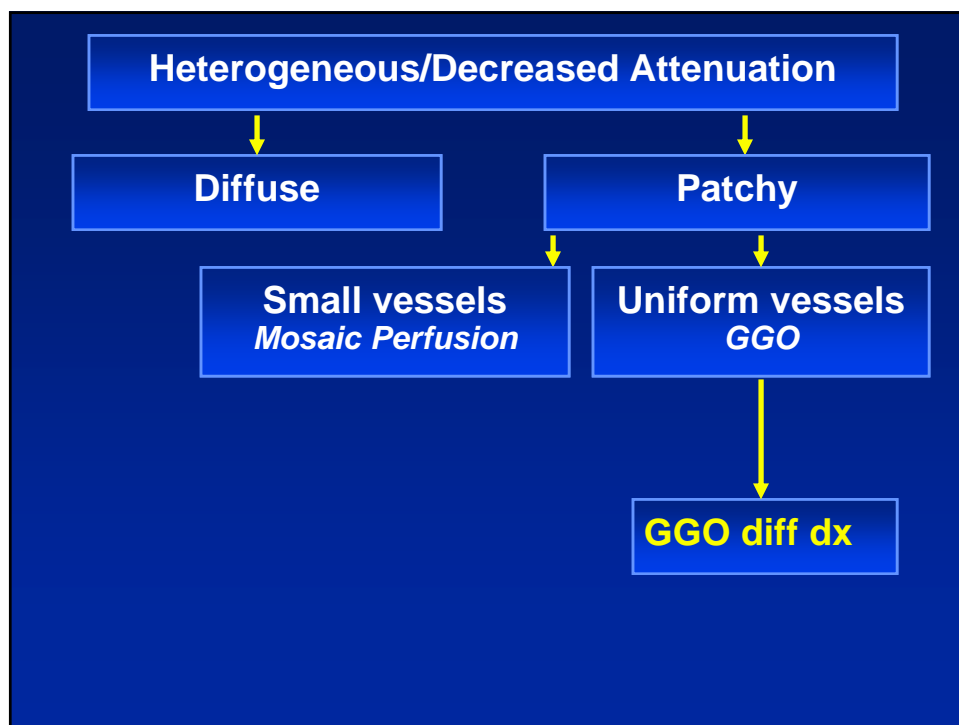
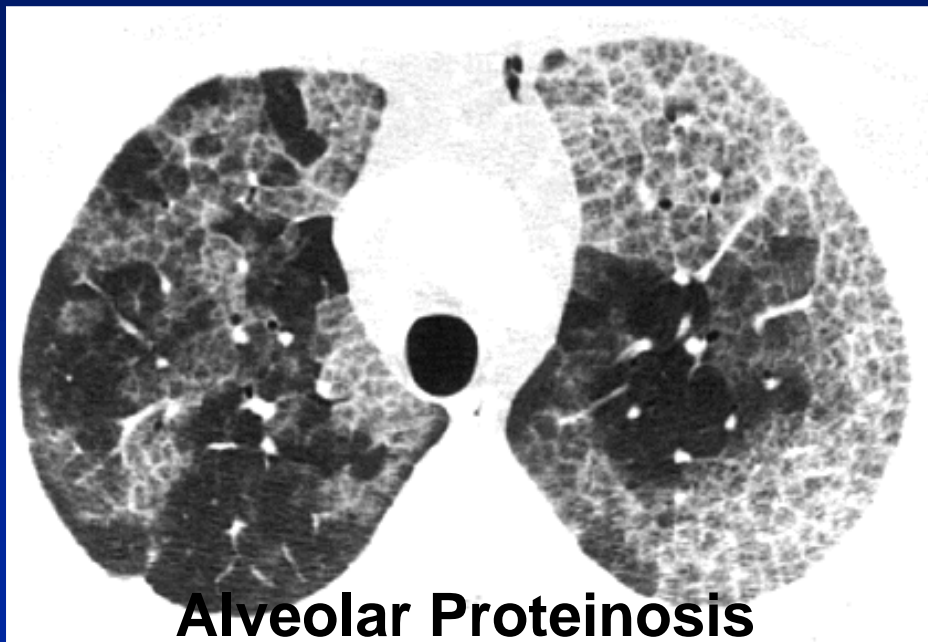
Chronic SOB. Most likely dx?

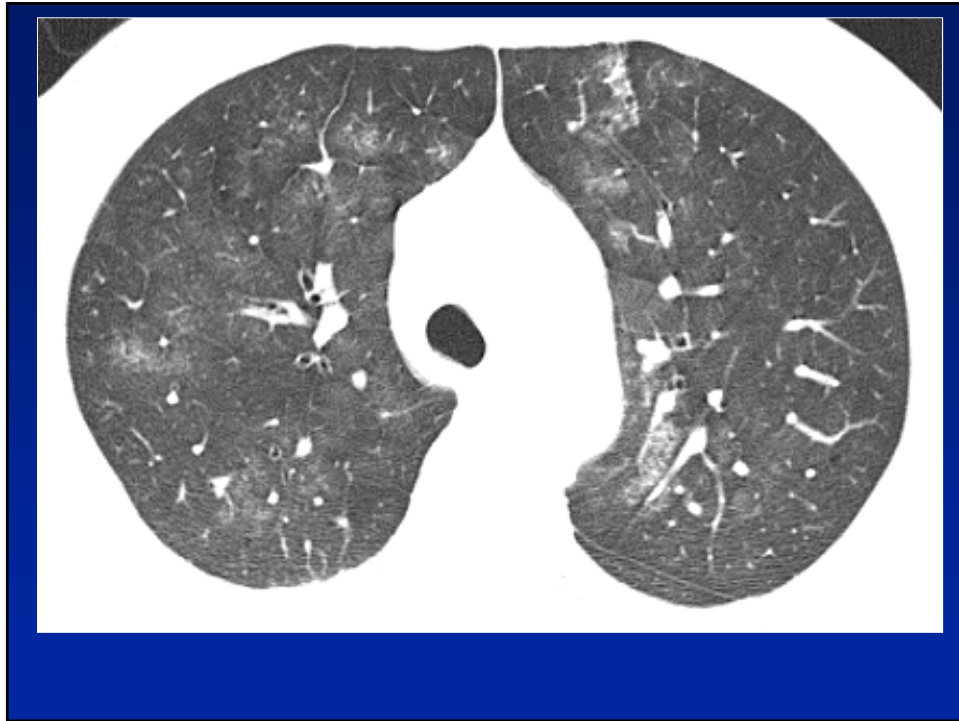
1. Idiopathic pulmonary fibrosis
2. Adenocarcinoma in situ (BAC)
3. Pneumocystis pneumonia
4. Alveolar proteinosis



Alveolar Proteinosis

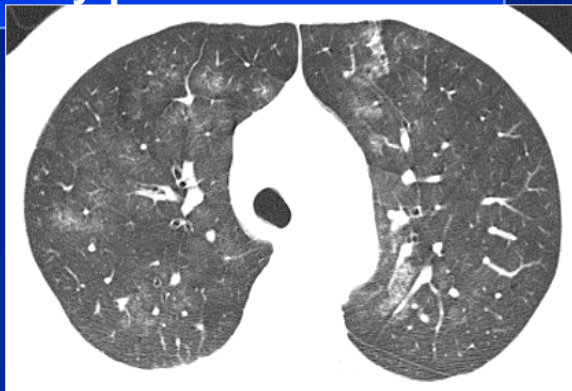


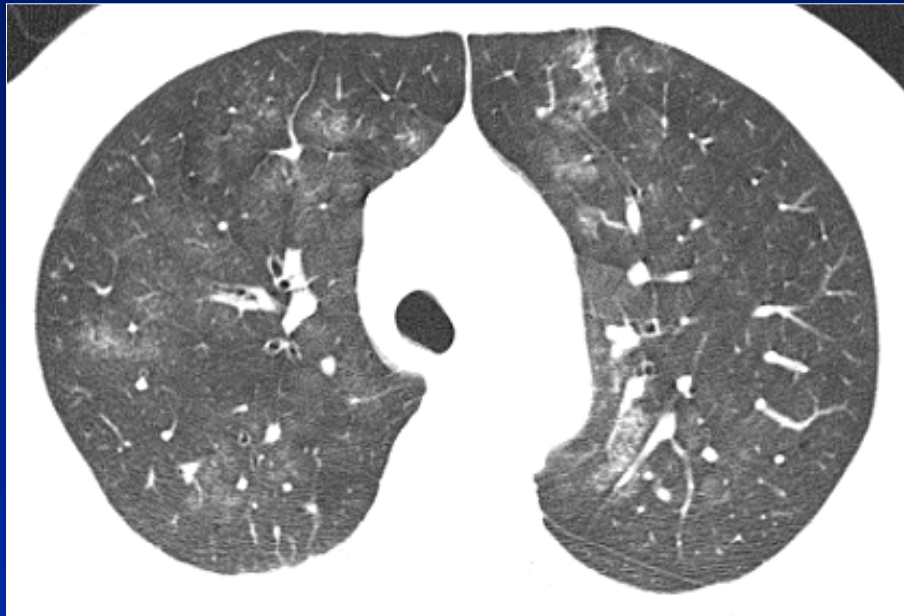




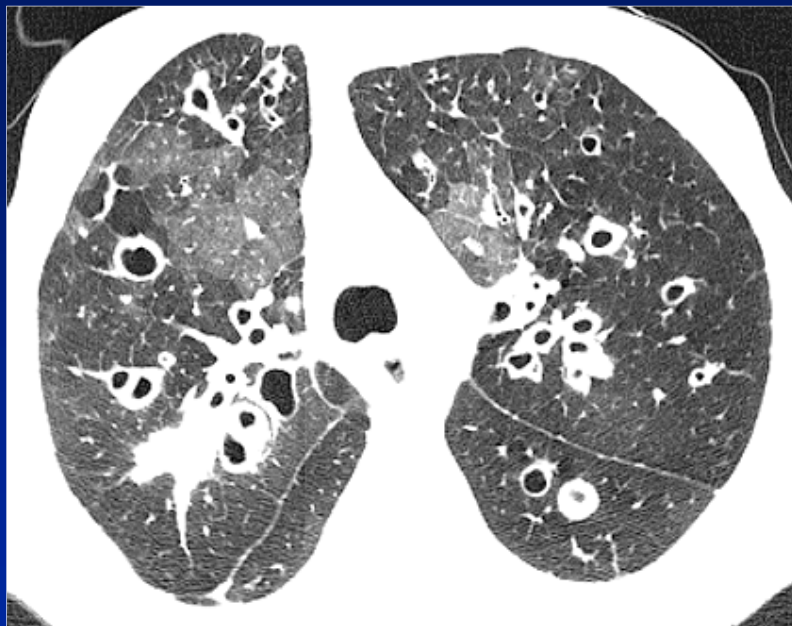
Pt is HIV+. Most likely diagnosis?

1. Alveolar hemorrhage
2. Pneumonia
3. Pulmonary edema
4. Hypersensitivity pneumonitis



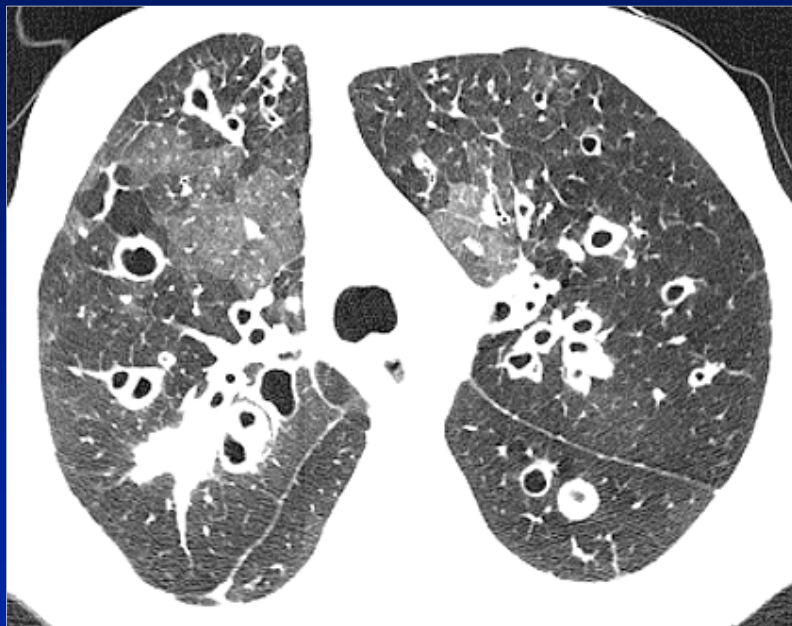
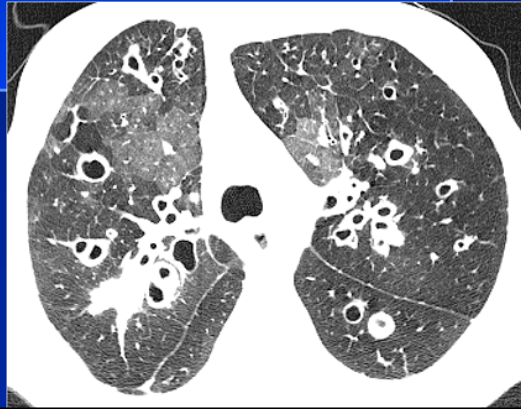


Hypersensitivity pneumonitis



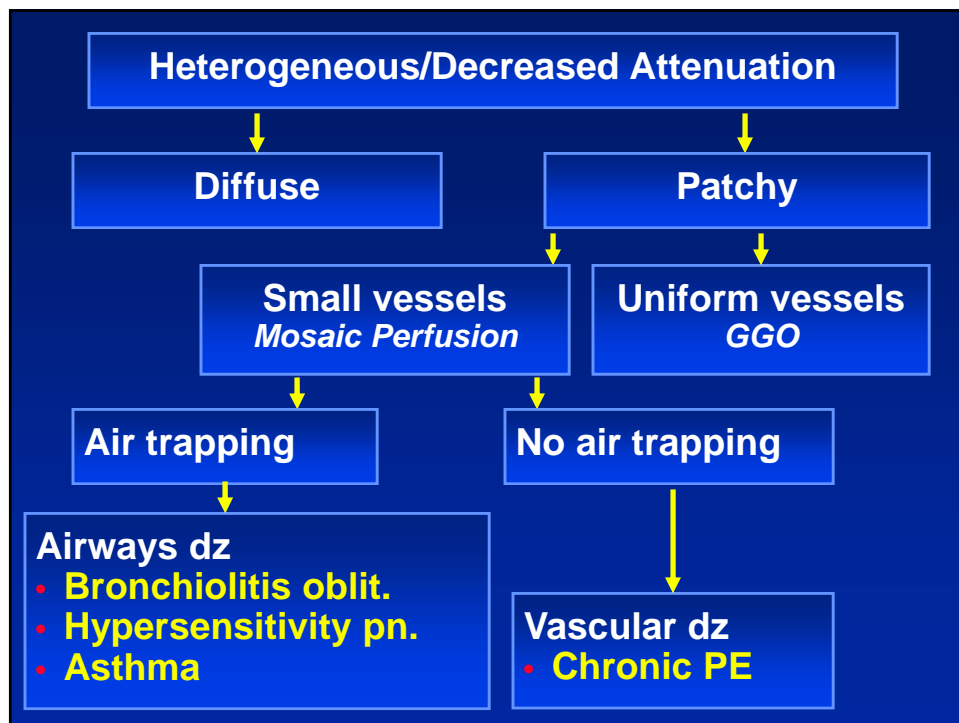
**What is the predominant finding
(other than bronchiectasis)?**

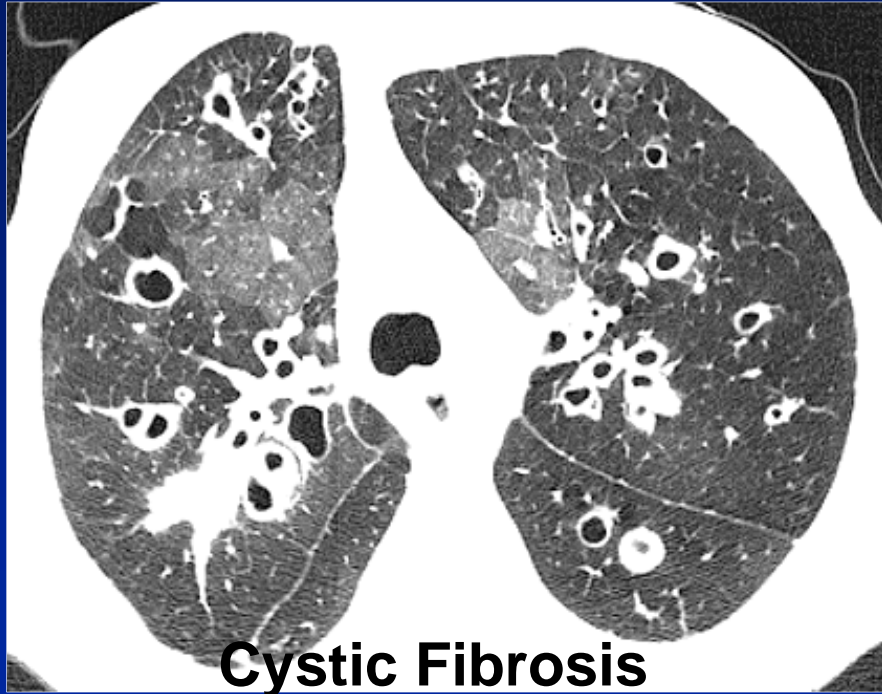
1. Consolidation
2. Ground glass opacity
3. Mosaic attenuation
4. Emphysema



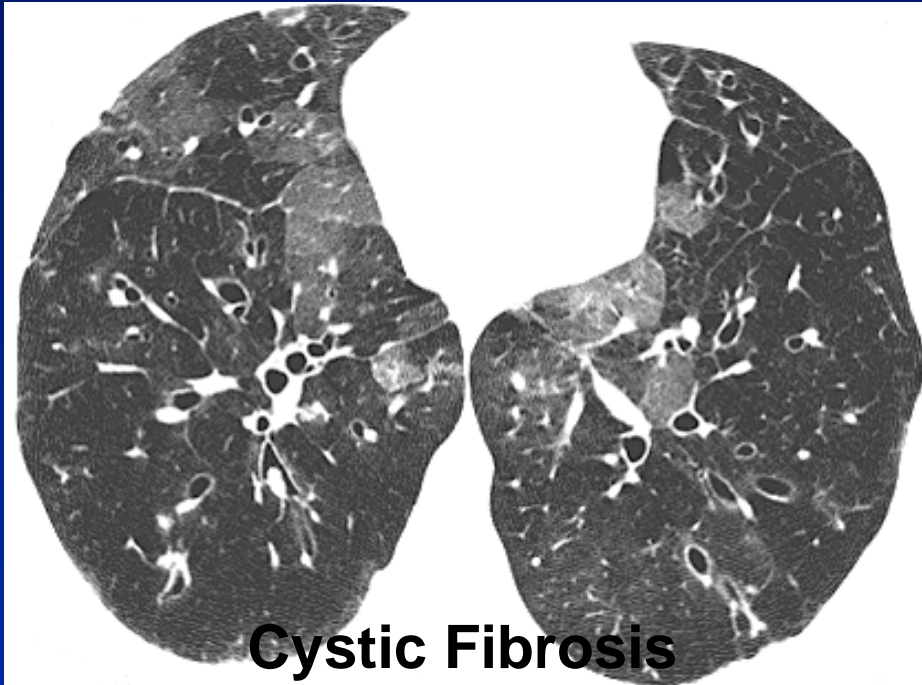
Mosaic Attenuation

Mosaic



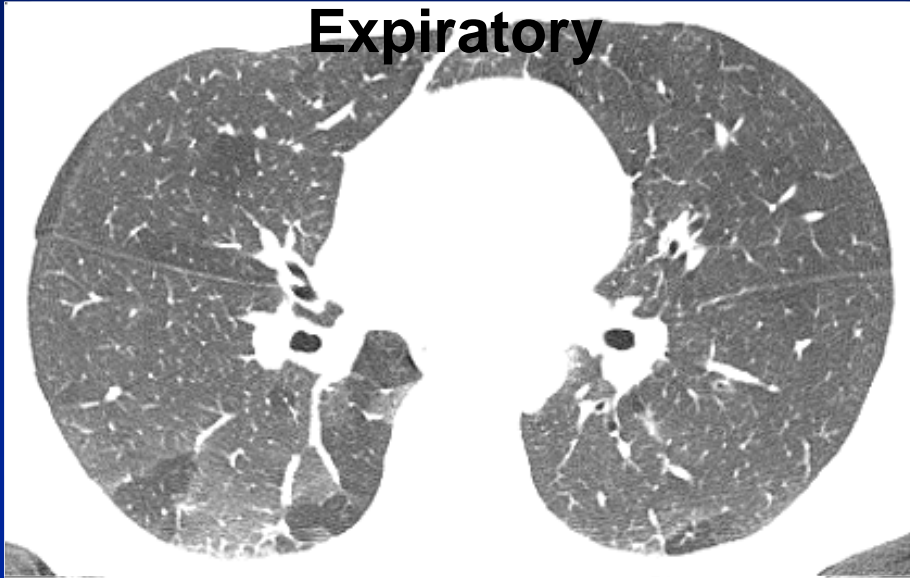


Cystic Fibrosis



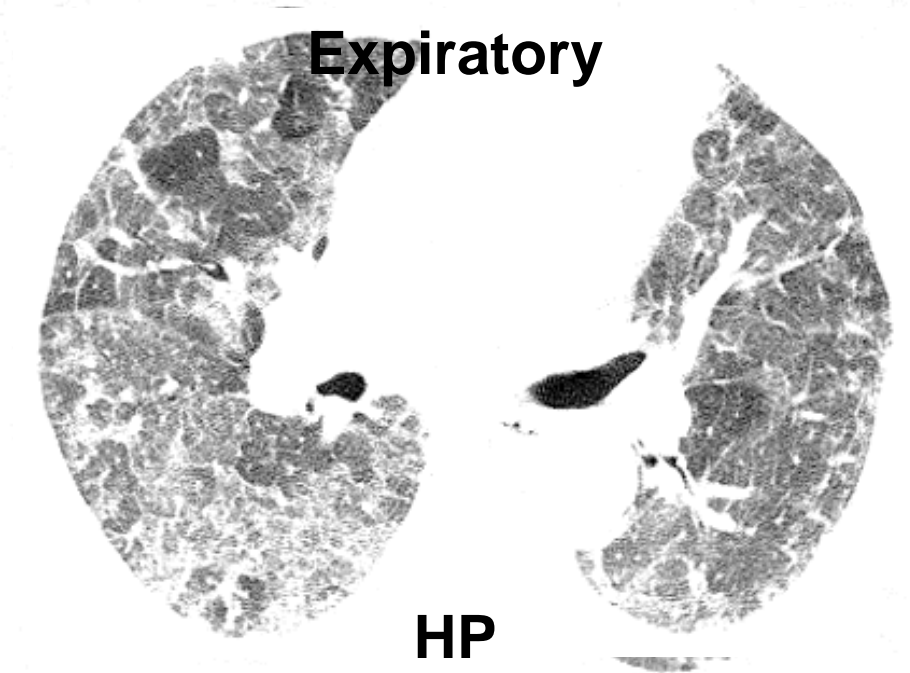
Cystic Fibrosis

Expiratory

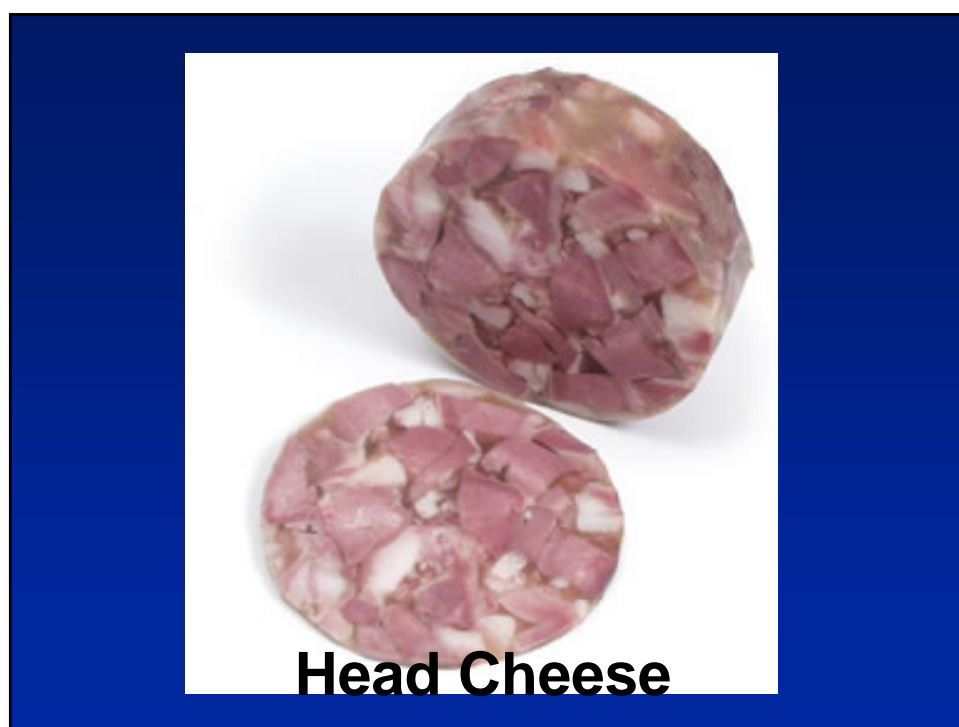
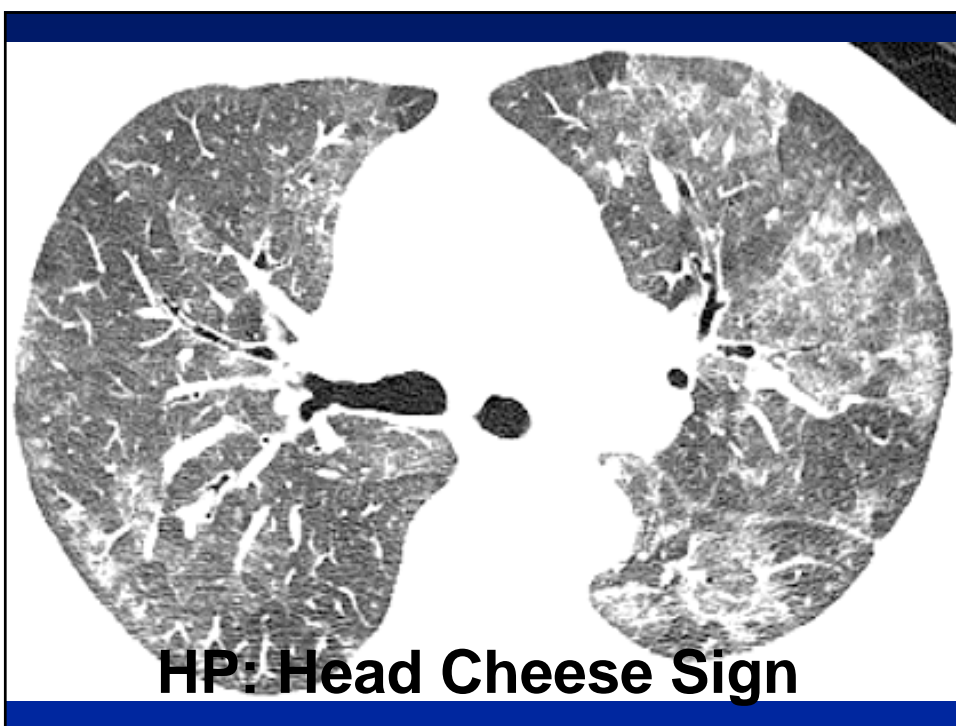


Asthma

Expiratory



HP



Conclusions

- **Characteristic appearance fo lobar atelectasis: helps with diagnosis**
- **Rounded atelectasis: four features**
- **Pattern of consolidation: diff dix**
- **GGO is nonspecific: history is key**
- **Mosaic: small airway/small vessel dz**
- **Head cheese: often HP**