Project: Ghana Emergency Medicine Collaborative

Document Title: Pneumonia in the ED

Author(s): Phil Bossart (University of Utah), MD 2012

Attribution Key

for more information see: http://open.umich.edu/wiki/AttributionPolicy

Use + Share + Adapt

{ Content the copyright holder, author, or law permits you to use, share and adapt. }

Public Domain – Government: Works that are produced by the U.S. Government. (17 USC § 105)

Public Domain – Expired: Works that are no longer protected due to an expired copyright term.

Public Domain – Self Dedicated: Works that a copyright holder has dedicated to the public domain.

Creative Commons – Zero Waiver

Creative Commons – Attribution License

Creative Commons – Attribution Share Alike License

Creative Commons – Attribution Noncommercial License

Creative Commons – Attribution Noncommercial Share Alike License

GNU – Free Documentation License

Make Your Own Assessment

{ Content Open.Michigan believes can be used, shared, and adapted because it is ineligible for copyright. }

Public Domain – Ineligible: Works that are ineligible for copyright protection in the U.S. (17 USC § 102(b)) *laws in your jurisdiction may differ

{ Content Open.Michigan has used under a Fair Use determination. }

Fair Use: Use of works that is determined to be Fair consistent with the U.S. Copyright Act. (17 USC § 107) *laws in your jurisdiction may differ

Our determination **DOES NOT** mean that all uses of this 3rd-party content are Fair Uses and we **DO NOT** guarantee that your use of the content is Fair.

To use this content you should **do your own independent analysis** to determine whether or not your use will be Fair.

Pneumonia in the ED

Phil Bossart MD
University of Utah
Salt Lake City

Types of Pneumonia

- CAP community acquired pneumonia
- HAP hospital acquired pneumonia
- HCAP health care associated pneumonia

Community Acquired Pneumonia

- Indications for Admission to hospital
- PSI Pneumonia Severity Index
- CURB 65 Confusion, Uremia (BUN > 20mg/dl or 7 mmol/L, RR >30, BP sys <90 or diastolic < 60, Age >65.

CURB 65

Some use CRB 65

0 – 1 home treatment

1 Admit to hospital

≥ 3 Admit to ICU

Prediction rules are **aids only**

Many other issues (co-morbidities, social factors)

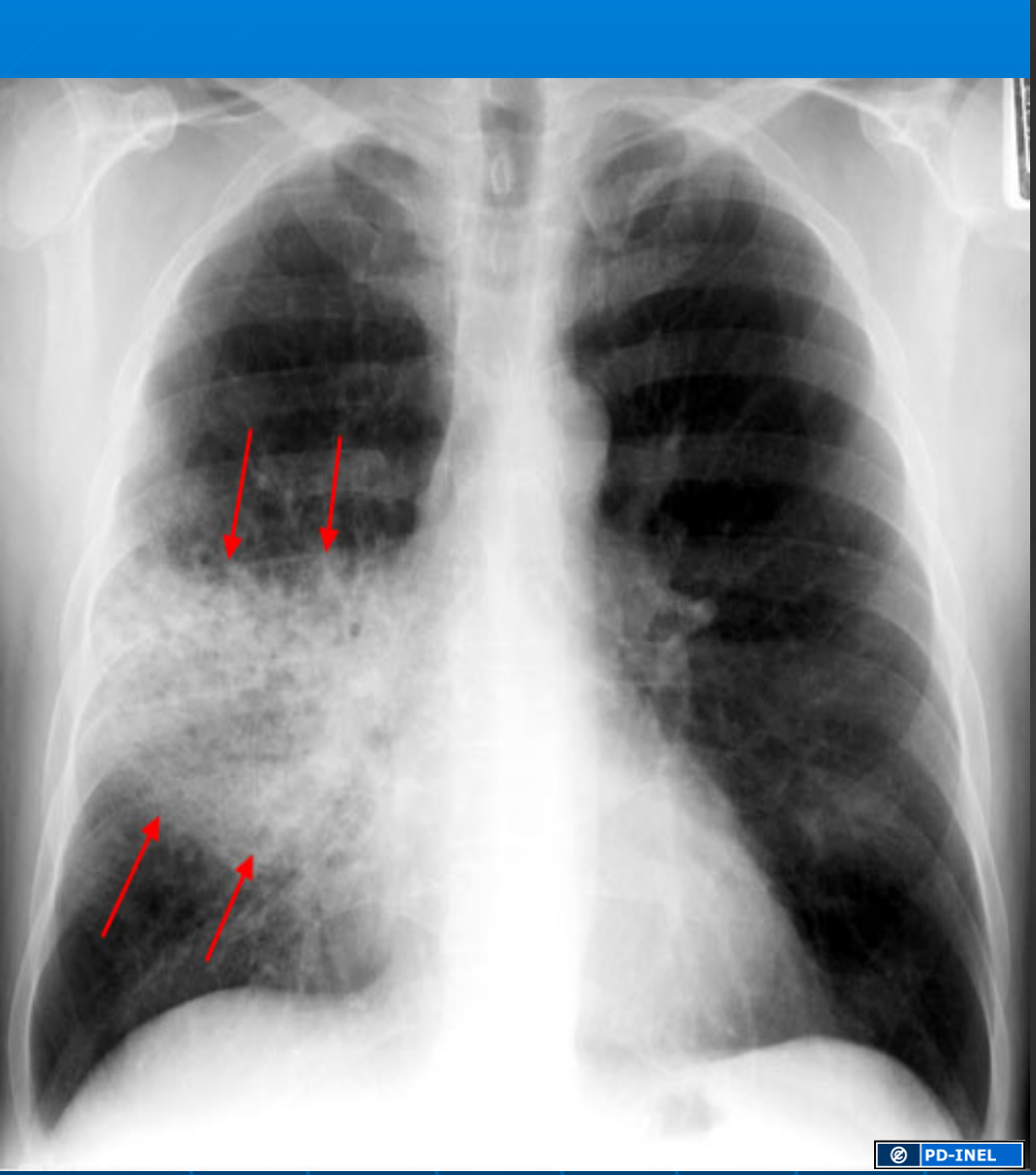
Causes of pneumonia

- Pneumococcus
- Haemophilus influenzae
- Atypical Bacteria (mycoplasma, chlamydia, legionella)
- Oropharyngeal aerobes and anaerobes (asp)
- Resp Viruses
- Staph
- Gram neg bacteria
- TB

Diagnosis of Pneumonia

- Clinical cough, fever, chest pain
- Rales, hypoxia
- Radiologic findings – chest x-ray is not 100% sensitive

- Clinical diagnosis – no single tests gives definitive answer.

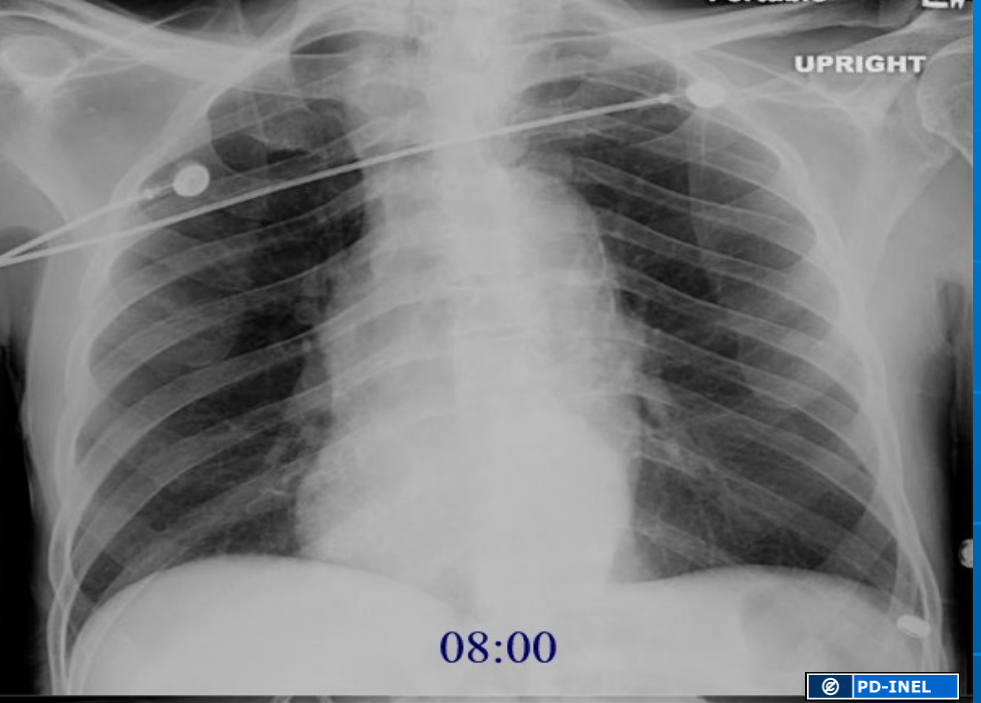


Source undetermined

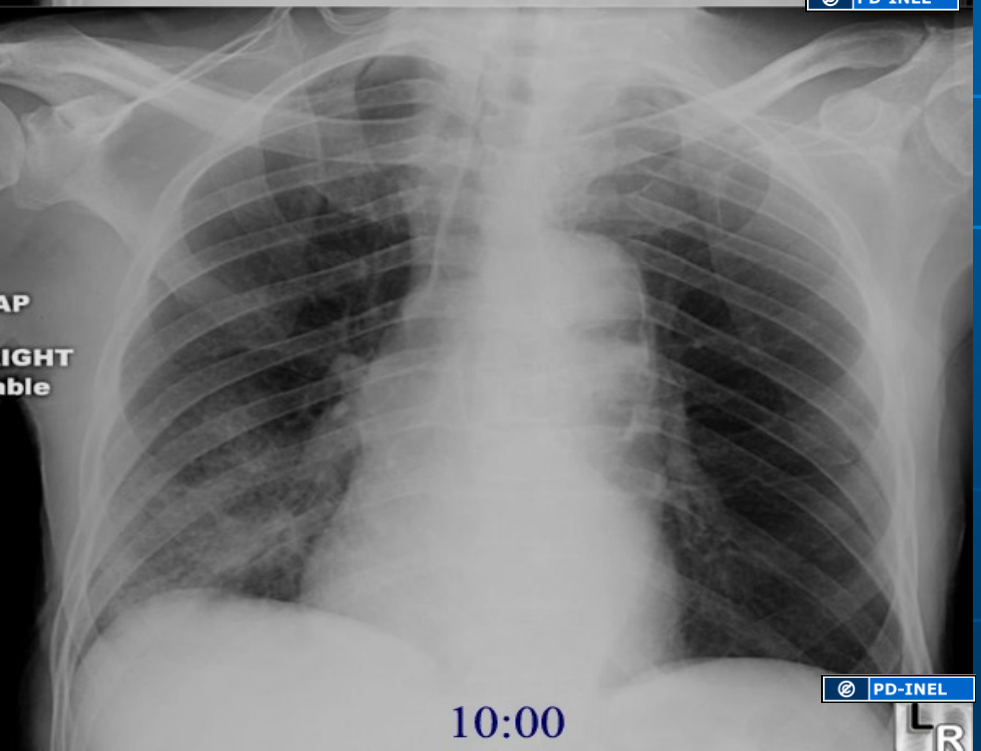
Source undetermined

These are PA and lateral films of RML pneumonia (arrows).
Note the indistinct borders, air bronchograms, and silhouetting of the right heart border.[9]

Pneumococcal pneumonia



Source undetermined



Source undetermined

· Aspiration, no matter what the type, usually occurs in the gravity dependent portions of the lung

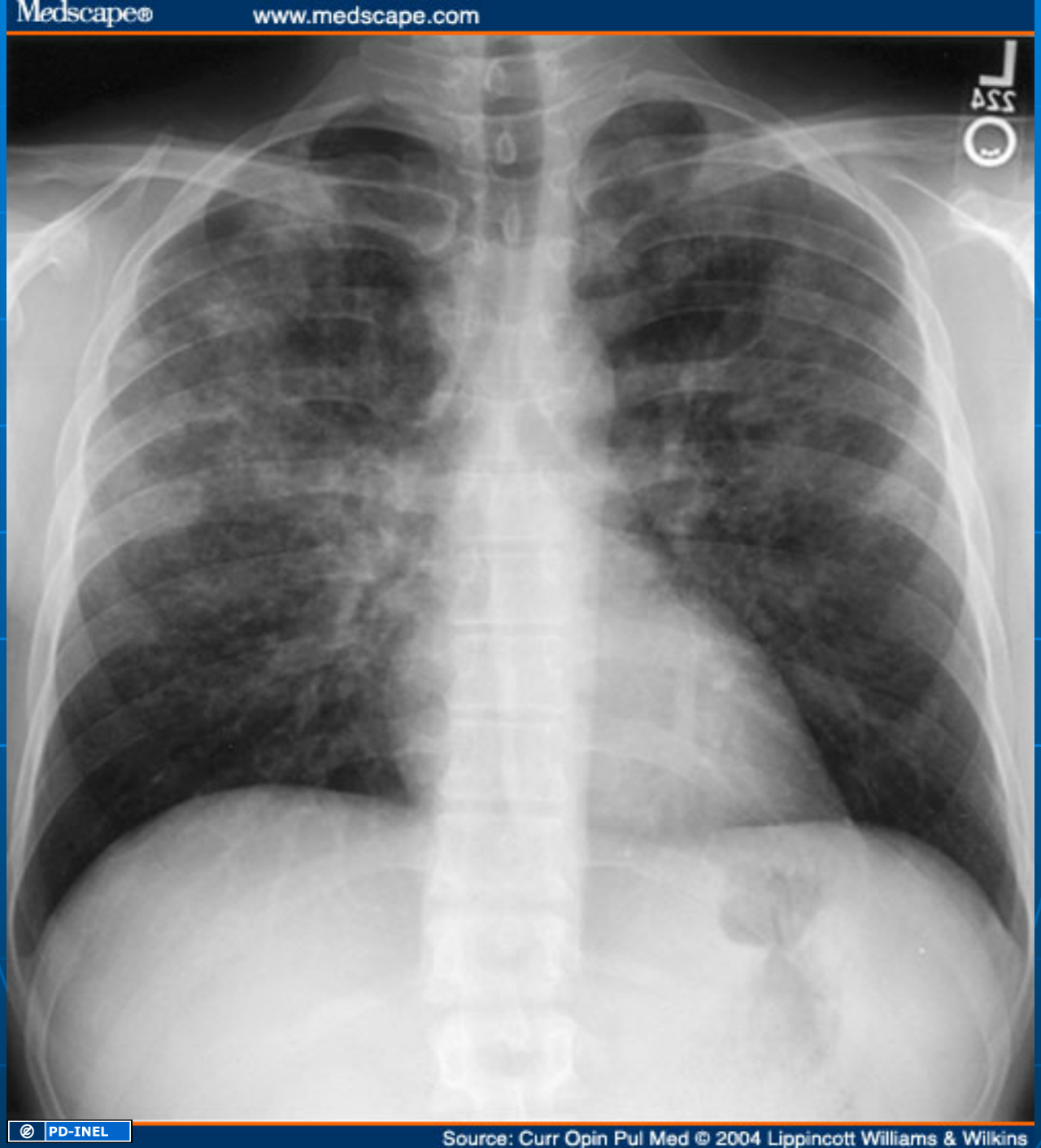
§ **Lower lobes,** especially **right**-sided, including and especially the superior segments of the lower lobes

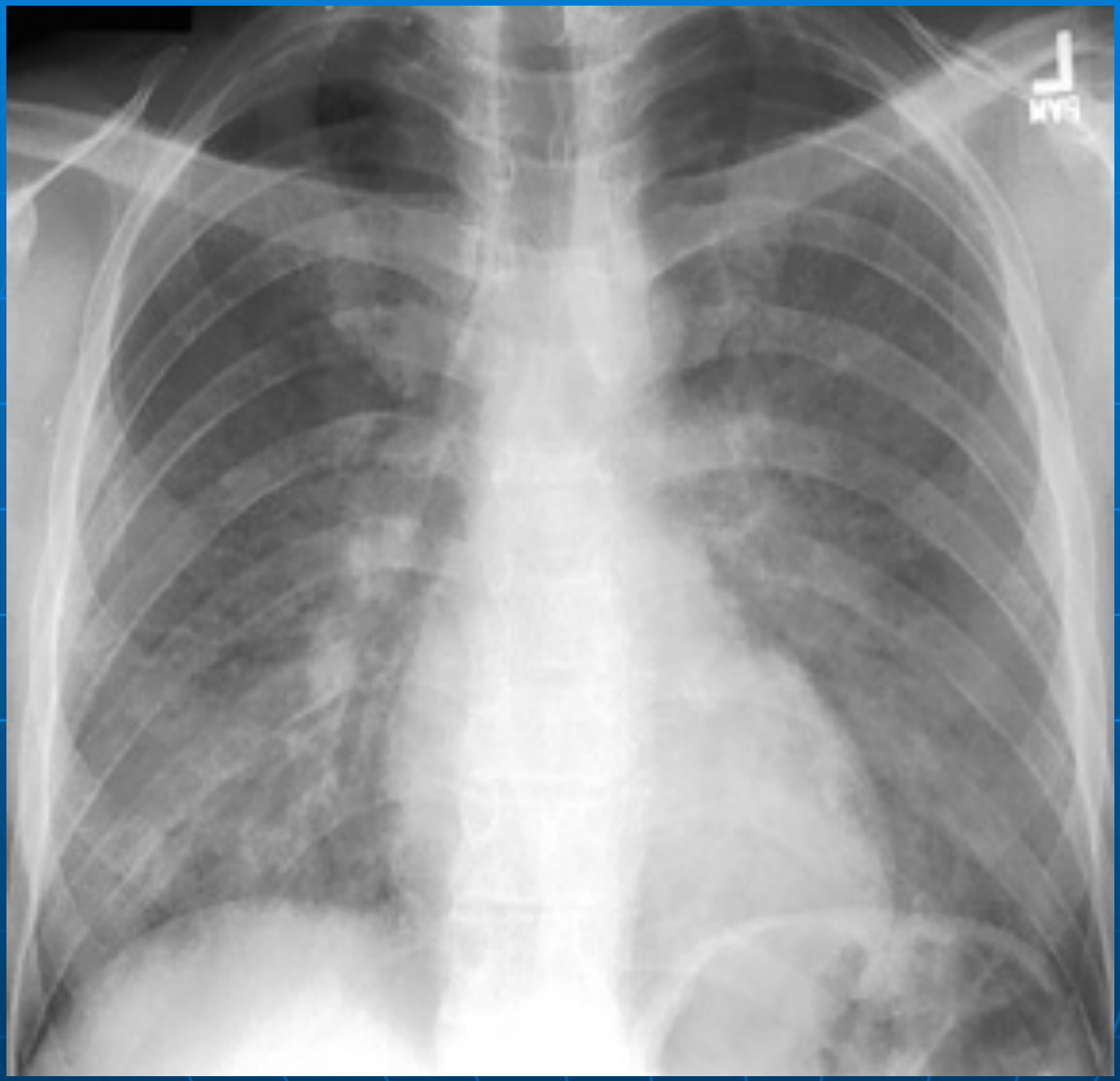
· Because of the larger caliber and straighter course of the right main bronchus

§ Posterior segments of the upper lobes

§ Aspiration which occurs while the person is prone may be seen in the right upper lobe and middle lobe or the lingula

PCP


Medscape®
www.medscape.com
PD-INEL
Source: Curr Opin Pul Med © 2004 Lippincott Williams & Wilkins



Pneumocystis jiroveci **(formerly *carinii*) pneumonia: chest X ray with bilateral, diffuse granular opacities**

Mycoplasma pneumonia

 Source undetermined

Emperic Treatment

- IDSA infectious disease society of america
- ATS american thoracic society
- BTS british thoracic society

- IDSA/ATS : in patient treatment: anti-pneumococcal fluoroquinolone (levofloxicin) or (betalactam plus macrolide)

IDSA/ATS guidelines

If suspect pseudomonas: add piperacillin-tazobactam or imipenem

If suspect MRSA: add vanc or linezolid

British Thoracic Society

- Amoxicillin 500 tid or Doxycycline 200mg load then 100mg q day.
- Much cheaper

Timing of Antibiotics in ED

- Retrospective studies suggested decrease mortality if abx given within 4 horus
- Lead to “standard” in U.S.A. ERs
- Lead to overuse of abx
- Now rec 6 hours

Out patient treatment

- Zithro or doxycycline
- Levofloxacin if sicker patient or more complicated

Aspiration Pneumonia

- Most pneumonia is from “aspiration”
- Larger amount of aspiration causing “pneumonitis”
- Anaerobes are less virulent bacteria

Aspiration Pneumonia

- Reduced consciousness
- Dysphagia
- GERD
- NG feedings

Gastric acid suppression meds – assoc with increased risk of pneumonia

Chemical Pneumonitis

- Aspiration of substances toxic to lungs separate from bacterial infection
- Diagnosis is presumptive based on hx and chest Xray
- Supportive care

- Most do fine but risk of ARDS and pneumonia

Aspiration Pneumonia

- Anaerobic bacteria from gingiva
- More common with poor dentition
- Most commonly evolves slowly
- May present late with lung abscess, empyema, pulmonary necrosis
- Treatment: Clinda or Augmentin or PCN + Metro

Pulmonary TB

- Eighth leading cause of death
- Effective medical therapy for over 50 years yet: lack of access to dx and rx, coexistence with HIV, drug resistance.
- TBI : inhalation, asymptomatic, noninfectious, called latent TB. Will have pos PPD or TST.

Epidemiology

- About one third of population is infected
- About 1.3 million deaths in 2007
- Prevalence is decreasing but slowly
- MDR –TB : resistant to INH or RIF
- XDR – TB: resist to INH, RIF, Fluoroquinolones, and aminoglycosides or Capreomycin.

Primary Pulmonary Tuberculosis

- Symptoms occurring around time of inoculation.
- Generally mild and usually fever
- Most people are asymptomatic
- Hilar adenopathy or mid/lower lung infiltrates

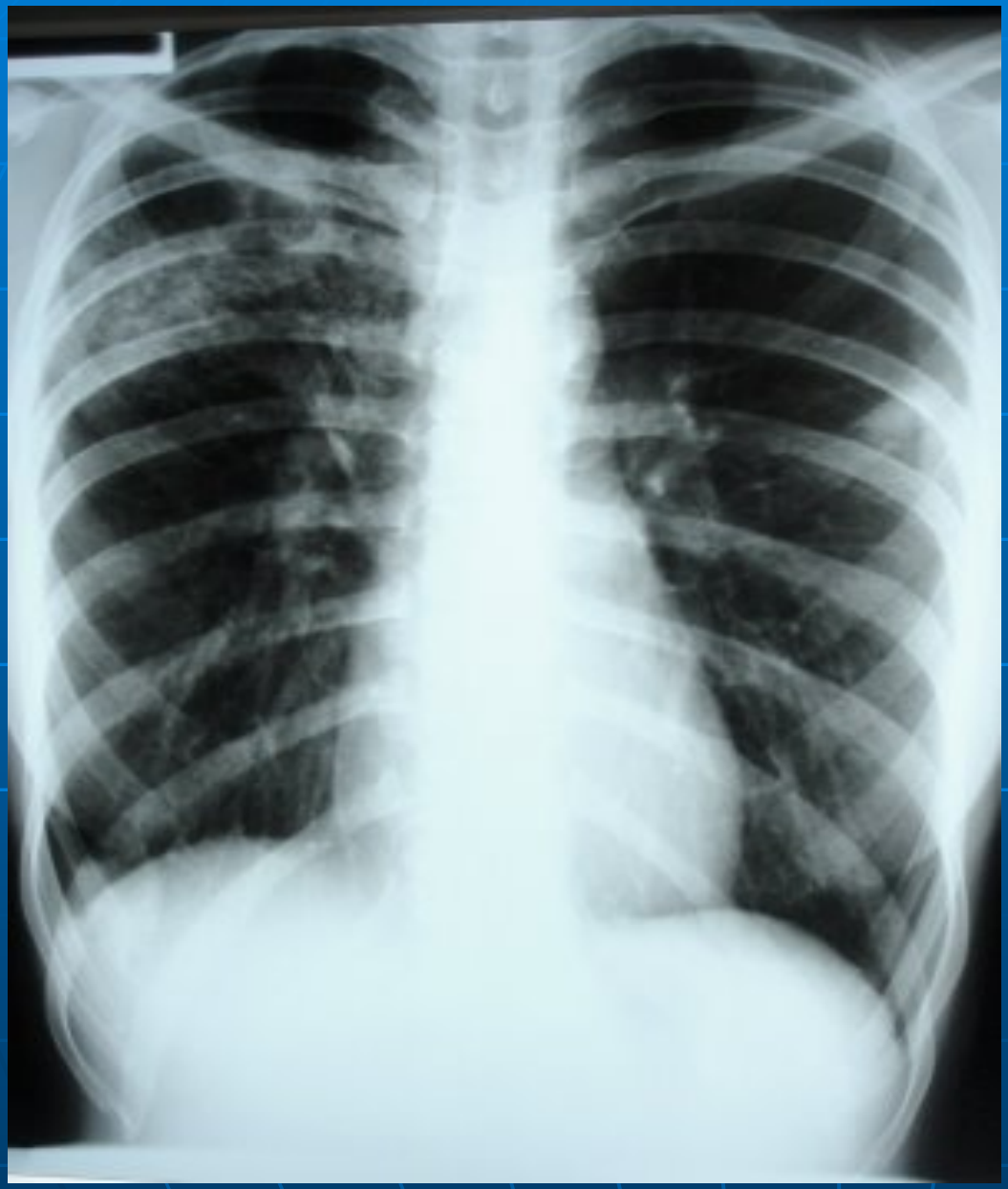
Reactive TB

- Chronic TB, post primary TB, recrudescent TB, endogenous TB
- In USA this is 90% of TB in non HIV patients
- Typically insidious: fever, cough, weight loss, fatigue, night sweats.

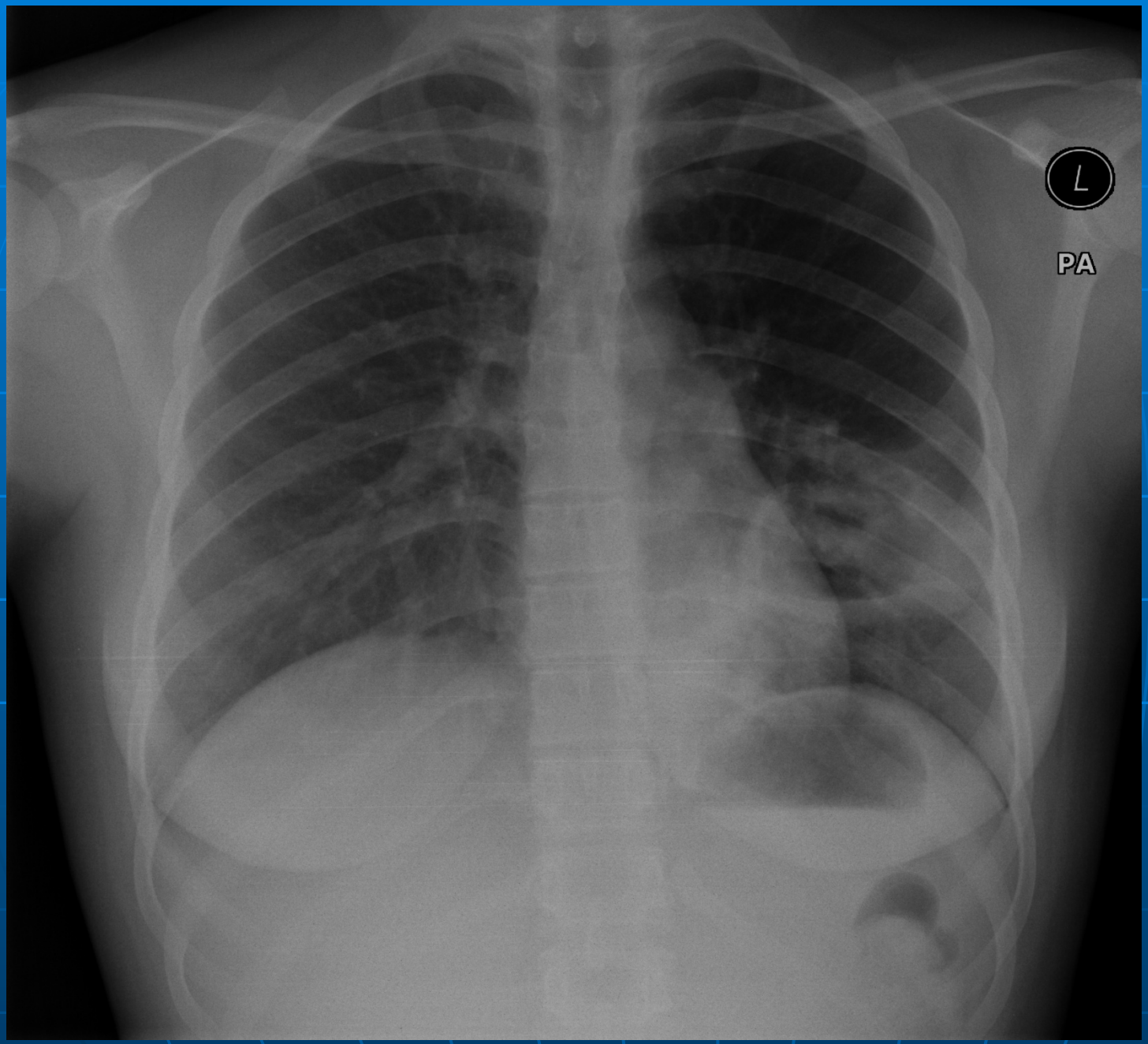
Reactive TB

- Chest X ray : apical infiltrates, may see cavities with air fluid levels.
- 5% may have normal Chest x-ray – esp HIV patients

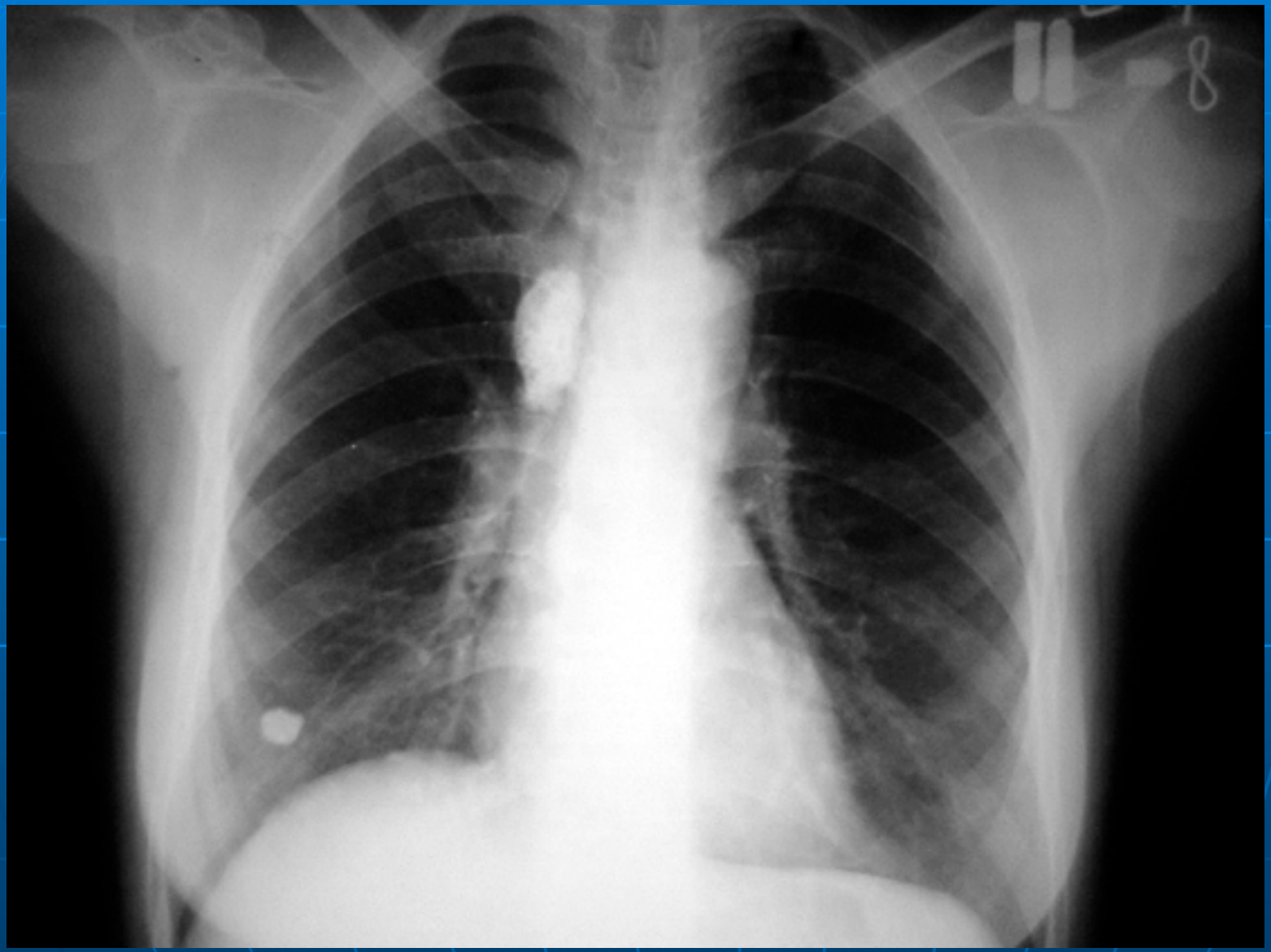
- Endobronchial TB – may mimic asthma



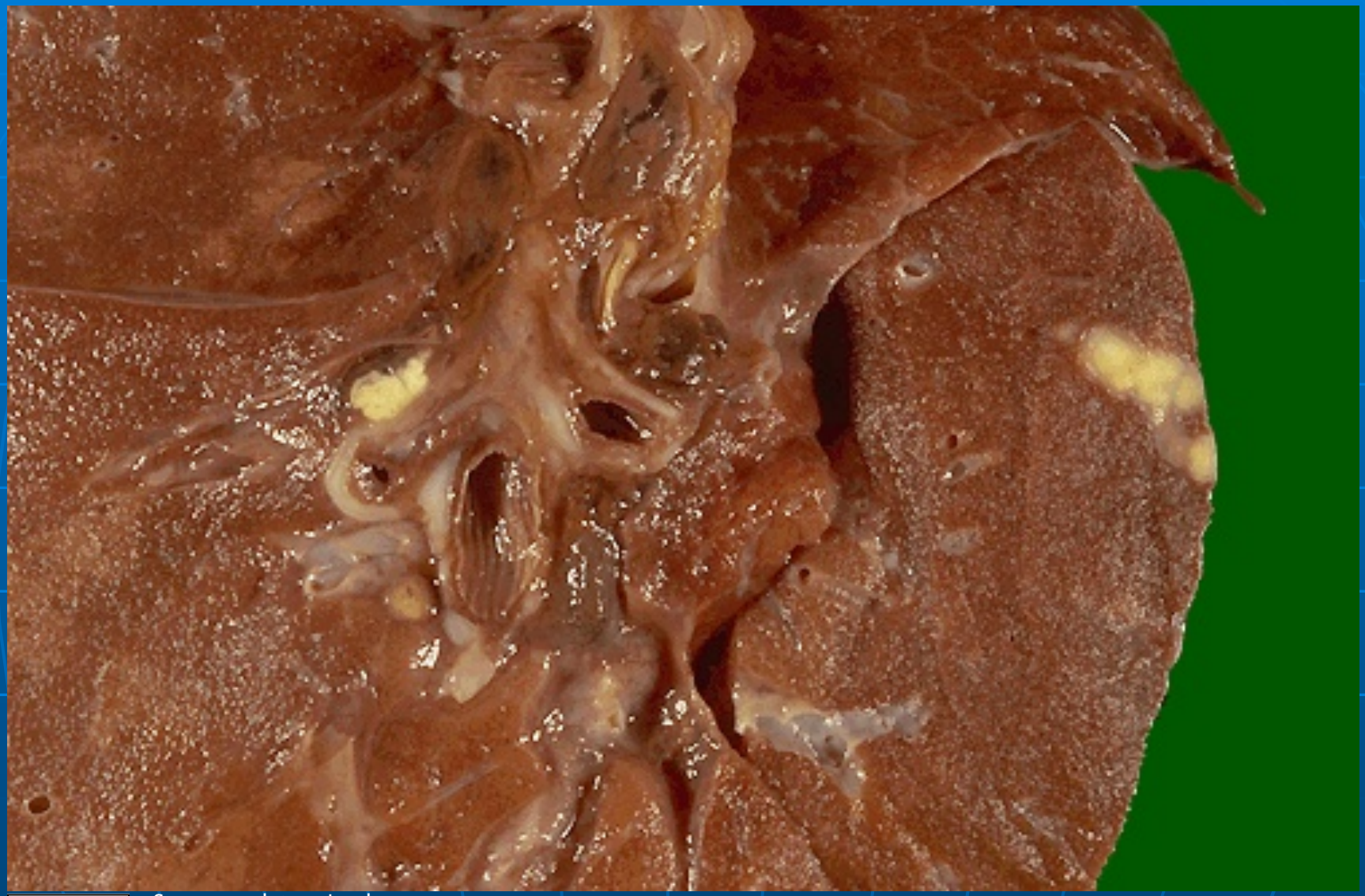
25 year old Indian girl presented with cough and hemoptysis. CXR showed consolidation with cavitations in the right upper zone.



20 year-old female with history of chronic productive cough and weight loss. Pulmonary tuberculosis - Cavitary lesion

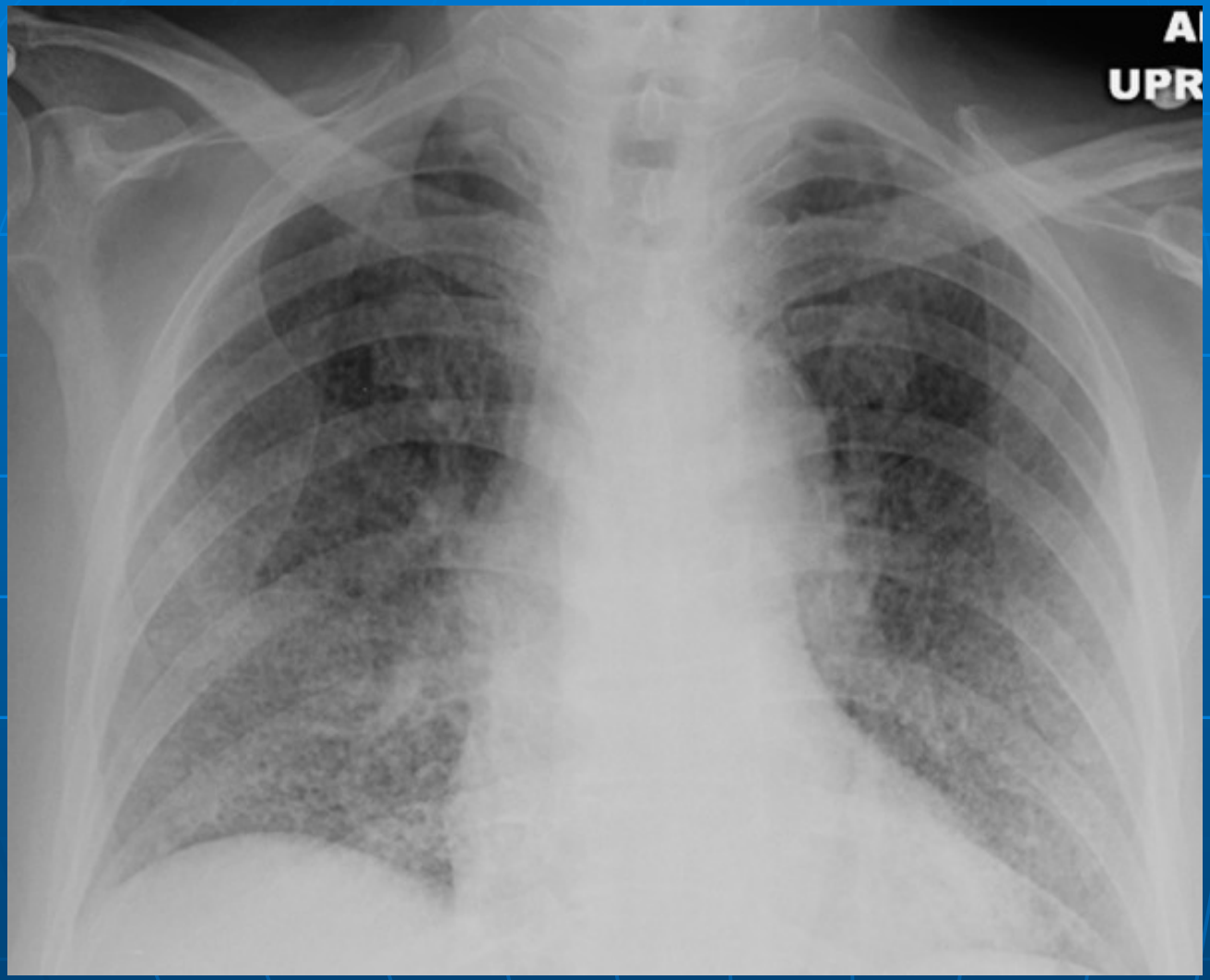


Pulmonary Tuberculosis Ghon Complex
Sub pleural nodule with mediastinal adenopathy.



PD-INEL Source undetermined

The Ghon complex is seen here at closer range. Primary tuberculosis is the pattern seen with initial infection with tuberculosis in children. Reactivation, or secondary tuberculosis, is more typically seen in adults.



Widespread hematogenous dissemination of *Mycobacterium Tuberculosis*
So named because the nodules are the size of **millet seeds** (1-5mm with a mean of 2 mm)
Miliary TB represents only 1-3% of all cases of TB

Extra-pulmonary TB

- Lymphadenitis: cervical, mediastinal, axillary nodes
- Pleural TB
- CNS TB
- Peritonitis
- Pericarditis
- Skeletal: Thoracolumbar spine (Potts disease)
- Miliary TB: hematogenous spread

TB Diagnosis

- TST, Mantoux test, PPD
- Diameter of induration at 48-72 hrs.
- Delayed type hypersensitivity
- Takes 2 – 12 weeks to turn positive
- False positives: BCG vaccine, other mycobacterium
- False negatives: anery, advanced age, immune suppression, etc.

TB Diagnosis

- About 10 % of immunocompetent people with LTBI will develop TB in life time.
- Greatest risk (5%) in first 2 years.
- Serum IGRAs - Interferon gamma release assays – measures IFG release after exposure to M tuberculosis-specific antigens.

TB diagnosis

- Smear microscopy
- Most rapid and least expensive
- AFB staining
- NNA nucleic acid amplification test
- Culture: liquid 1 – 3 weeks, solid up to 6 weeks

TB treatment

- Latent TB: INH for 9 months
- Active TB : DOT (direct observation therapy)

  Initial phase of 4 drugs for 2 months followed by 4 – 7 months continuation phase

TB with HIV: Only a few differences.