



# RESPIRATORY INFECTIONS IN AHD

Dr L Richards

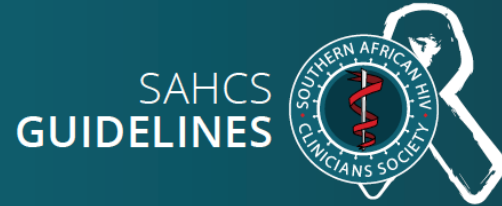
# RESOURCES

## Standard Treatment Guidelines and Essential Medicines List for South Africa

Primary Healthcare Level  
2020 Edition

## Standard Treatment Guidelines and Essential Medicines List for South Africa

Hospital Level, Adults  
2019 Edition



SOUTHERN AFRICAN HIV CLINICIANS SOCIETY CLINICAL  
GUIDELINES FOR **HOSPITALISED ADULTS WITH  
ADVANCED HIV DISEASE 2022**

### Guideline

## South African guideline for the management of community-acquired pneumonia in adults

Tom H. Boyles<sup>1</sup>, Adrian Brink<sup>1,2</sup>, Greg L. Calligaro<sup>3</sup>, Cheryl Cohen<sup>4,5</sup>, Keertan Dheda<sup>3</sup>, Gary Maartens<sup>6</sup>, Guy A. Richards<sup>7</sup>, Richard van Zyl Smit<sup>3</sup>, Clifford Smith<sup>8</sup>, Sean Wasserman<sup>1</sup>, Andrew C. Whitelaw<sup>9,10</sup>, Charles Feldman<sup>11</sup>; South African Thoracic Society, Federation of Infectious Diseases Societies of Southern Africa

# CLINICAL CASE

40yr female

- HIV +, CD4 146 on TLD
- P/w productive cough, fever and pleuritic chest pain on the right for 5 days
- BP 116/78 HR 106 T 38° RR 24 Sats 95% RA

Chest: crackles right lower zone

GCS 15/15

# POLL

What investigation should you order next?

- A. An arterial blood gas (ABG)
- B. A chest x-ray
- C. A CRP
- D. No further investigations are needed, treat as a community acquired pneumonia
- E. I don't know

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# BACTERIAL PNEUMONIA - DIAGNOSIS

- Symptoms
- Vital signs
- Examination
- \*CXR

# BACTERIAL PNEUMONIA - DIAGNOSIS

- Symptoms

Cough <2 weeks, pleuritic chest pain, SOB, rigors

No rhinorrhea/sore throat

# BACTERIAL PNEUMONIA - DIAGNOSIS

- Symptoms

- Vital signs

Fever, rigors, ↑ HR, ↑ RR



# BACTERIAL PNEUMONIA - DIAGNOSIS

- Symptoms

- Vital signs

- Examination

Chest: crackles, BB, dullness, ↓ chest expansion

# BACTERIAL PNEUMONIA - DIAGNOSIS

- Symptoms

- Vital signs

- Examination

- \*CXR

Focal area of opacification or consolidation

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# CLINICAL CASE

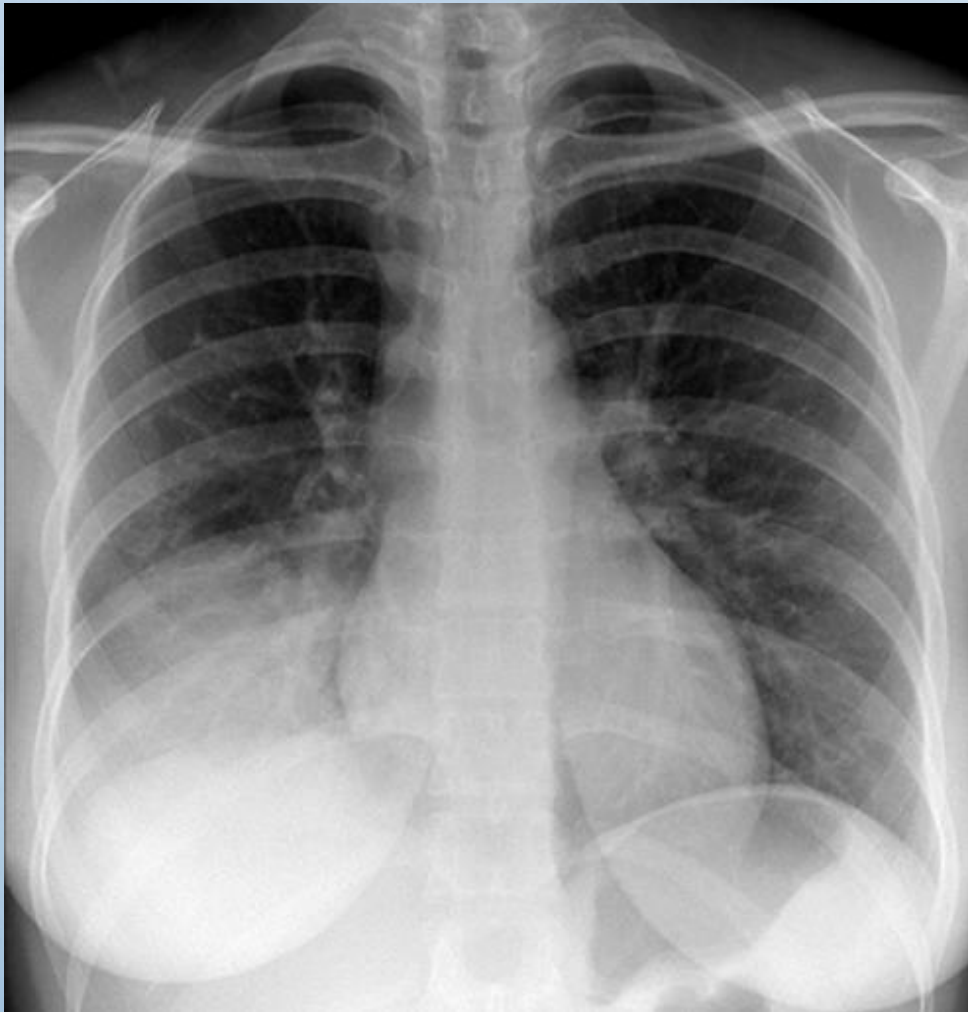
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- BP 116/78    HR 106    T 38°    RR 24    Sats 95% RA

Chest: **crackles** right lower zone

GCS 15/15









# BACTERIAL PNEUMONIA - MANAGEMENT

- Age
- Co-morbidities
- Severity
- Social circumstances

# BACTERIAL PNEUMONIA – SEVERITY SCORE

- **C**onfusion
- **U**rea  $\geq 7$ mmol/L
- **R**espiratory rate  $\geq 30$
- **B**lood pressure  $< 90$ mmHg &/or  $\leq 60$ mmHg
- **65** years & older

# BACTERIAL PNEUMONIA – SEVERITY SCORE

At a primary healthcare level:

- **C**onfusion
- **R**espiratory rate  $\geq 30$
- **B**lood pressure  $< 90\text{mmHg}$  &/or  $\leq 60\text{mmHg}$
- **65** years & older

# BACTERIAL PNEUMONIA – SEVERITY SCORE

## **CRB 65 score**

0: Mild pneumonia

$\geq 1$ : Moderate-severe

## **CURB 65 score**

0-1: Mild

2: Moderate

$\geq 3$ : Severe

# BACTERIAL PNEUMONIA – SEVERITY SCORE

## CRB 65 score

0: Mild pneumonia

**≥1: Moderate-severe**

## CURB 65 score

0-1: Mild

**2: Moderate**

**≥3: Severe**

# CLINICAL CASE

40yr female

- HIV +, CD4 146 on TLD
- P/w productive cough, fever and pleuritic chest pain on the right for 5 days
- BP 116/78    HR 106    T 38°    RR 24    Sats 95% RA  
Chest: crackles right lower zone  
GCS 15/15

**CRB-65 =**

# POLL

What is this patient's CRB-65 score?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4



# POLL

What is this patient's CRB-65 score?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

# CLINICAL CASE

40yr female

- HIV +, CD4 146 on TLD
- P/w productive cough, fever and pleuritic chest pain on the right for 5 days
- BP 116/78    HR 106    T 38°    RR 24    Sats 95% RA  
Chest: crackles right lower zone  
GCS 15/15

**CRB-65 = 0 → Mild CAP potentially for out pt treatment**

# BACTERIAL PNEUMONIA –OUT PT TREATMENT

- Amoxil/clavulanate 1g BD PO x 5/7
- Severe penicillin allergy:  
Moxifloxacin 400mg dly PO x 5/7

# CLINICAL CASE

70 yr female

- HIV +, CD4 146 on TLD
- P/w productive cough, fever and pleuritic chest pain on the right for 5 days
- BP 116/78    HR 106    T 38°    RR 30    Sats 93% RA  
Chest: crackles right lower zone  
GCS 15/15

**CRB-65 =**

# POLL

What is this patient's CRB-65 score?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

# POLL

What is this patient's CRB-65 score?

- A. 0
- B. 1
- C. 2
- D. 3
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# CLINICAL CASE

70 yr female

- HIV +, CD4 146 on TLD
- P/w productive cough, fever and pleuritic chest pain on the right for 5 days
- BP 116/78    HR 106    T 38°    RR 30    Sats 93% RA  
Chest: crackles right lower zone  
GCS 15/15

✓    ✓  
**CRB-65 = 2 → Moderate-severe CAP → Refer**

# BACTERIAL PNEUMONIA– REFER TO HOSPITAL





# BACTERIAL PNEUMONIA– REFER TO HOSPITAL

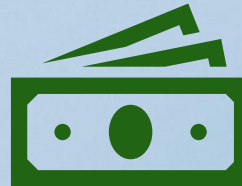


# BACTERIAL PNEUMONIA– REFER TO HOSPITAL



- [https://favpng.com/png\\_view/high-blood-pressure-values-on-a-sphygmomanometer-hypertension-blood-pressure-illustration-png/p2v8fdGc](https://favpng.com/png_view/high-blood-pressure-values-on-a-sphygmomanometer-hypertension-blood-pressure-illustration-png/p2v8fdGc)
- NDOH. Primary healthcare STG and EML. 2020

# BACTERIAL PNEUMONIA– REFER TO HOSPITAL



# BACTERIAL PNEUMONIA – BEFORE TRANSFER



Oxygen to keep sats  $\geq 92\%$



Ceftriaxone 1g IV/IM stat



Fluids if BP  $< 90/60$ mmHg

# BACTERIAL PNEUMONIA – IN HOSPITAL

- CXR
- Severity score
  - Further investigations
  - Level of care
  - Medication

# CLINICAL CASE

70 yr female

- HIV +, CD4 146 on TLD
- CAP CRB-65<sup>✓</sup> = 2 at the clinic
- BP113/70      Sats 93% RA      RR 32      HR 110
- CXR: consolidation RUL
- Urea 8 → CURB-65<sup>✓✓</sup> = **3**

# BACTERIAL PNEUMONIA – IN HOSPITAL

**CURB-65  $\geq$  2:** B/C & sputum MCS  
(Moderate)

**CURB-65  $\geq$  3:** Consider admission to HCA/ICU  
(Severe)

All pts to have sputum TB NAAT

Oxygen if sats < 94%

# BACTERIAL PNEUMONIA – ANTIBIOTICS

	$\geq 65$ years OR co-morbidities	Penicillin allergy
<b>Non-severe</b> <b>CURB- 65 &lt;3</b>	Amoxil/clavulanate 1.2g tds IV OR Ceftriaxone 2g dly IV	Moxifloxacin 400mg dly PO
<b>Severe</b> <b>CURB- 65 <math>\geq 3</math></b>	Amoxil/clavulanate 1.2g tds IV OR Ceftriaxone 2g dly IV PLUS Azithromycin 500mg dly PO	Moxifloxacin 400mg dly PO OR Levofloxacin 750mg dly PO/IV

Antibiotics for 5 days (can extend to 7)



# CLINICAL CASE

70 yr female

- HIV +, CD4 246 on TLD
- Severe (CURB-65 = 3) CAP with hypoxaemia

Plan:

Admitted to HCA

Oxygen, B/C, sputum MCS + TB NAAT

Amoxil/clavulanate 1.2g tds IV PLUS

Azithromycin 500mg dly PO

# BACTERIAL PNEUMONIA – ANTIBIOTICS



- BP normal and stable
- HR < 100/min
- RR < 25/min
- Sats > 92% without O<sub>2</sub>
- Temp < 37.8°
- No longer delirious
- Able to tolerate oral medication

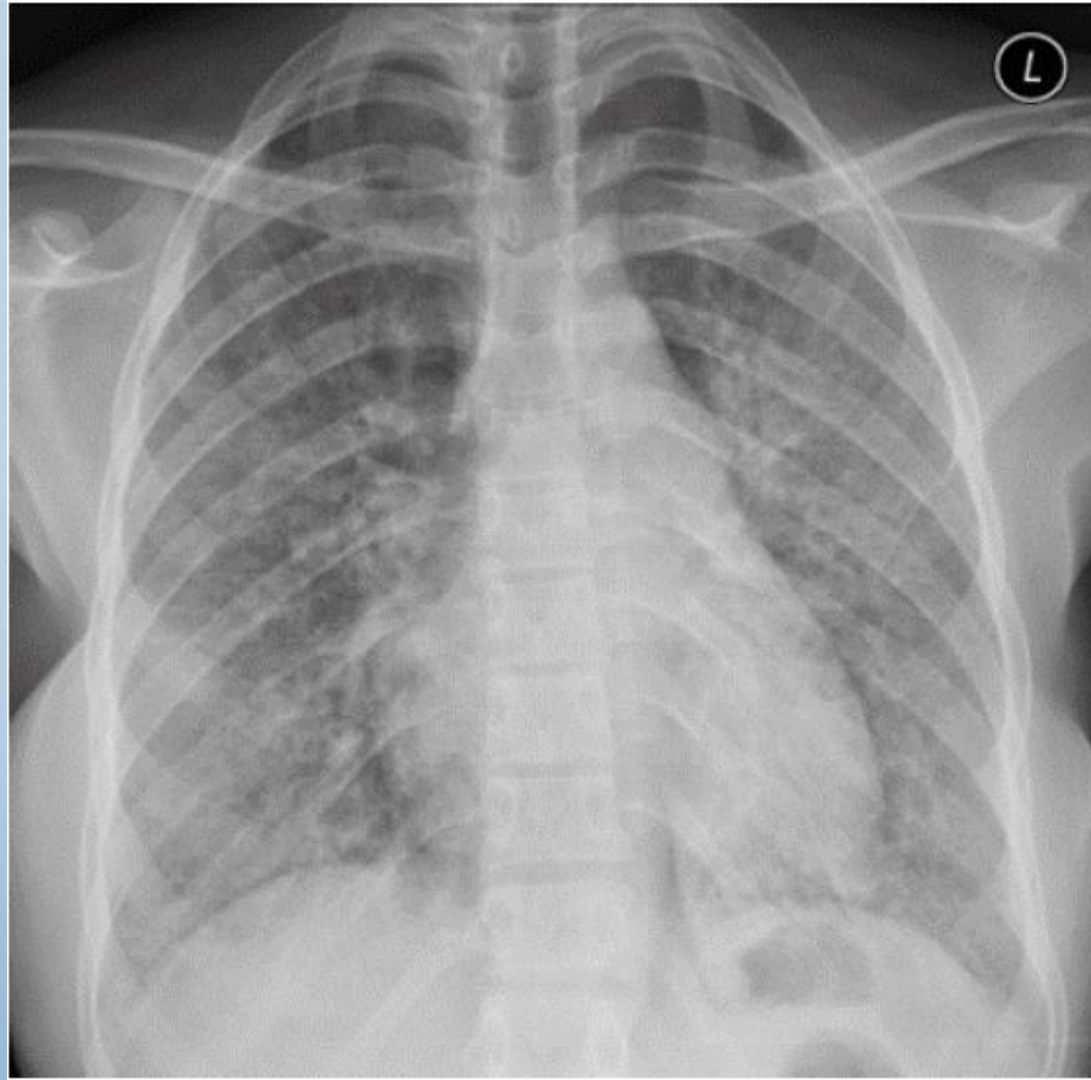
# CLINICAL CASE

40yr female

- Newly dx HIV +, CD4 20, crAg -
- P/w SOB and dry cough for 3 weeks
- BP 116/78 HR 106 T 37° RR 34 Sats 80% RA

Chest: Clear

GCS 15/15



# POLL

What is this patient's diagnosis?

- A. PTB
- B. Bacterial pneumonia
- C. Pneumocystis pneumonia (PCP or PJP)
- D. You cannot make a diagnosis without additional investigations
- E. I don't know

# POLL

What is this patient's diagnosis?

- A. PTB
- B. Bacterial pneumonia
- C. **Pneumocystis pneumonia (PCP or PJP)**
- D. You cannot make a diagnosis without additional investigations
- E. I don't know

# PNEUMOCYSTIS JIROVECI PNEUMONIA

## PREVIOUSLY PNEUMOCYSTIS CARINII



PNEUMOCYSTIS JIROVECII PNEUMONIA  
PJP





PNEUMOCCYSTIS JIROVECII PNEUMONIA  
PCP



# PCP - DIAGNOSIS

- Symptoms
- Vital signs
- Examination
- CXR
- No evidence of bacterial pneumonia

# PCP - DIAGNOSIS

- Symptoms

Progressive dyspnea & dry cough <12 weeks

# PCP - DIAGNOSIS

- Symptoms
- Vital signs
  - Tachypnoea  $>30$ , sats  $< 94\%$  RA

# PCP - DIAGNOSIS

- Symptoms

- Vital signs

- Examination

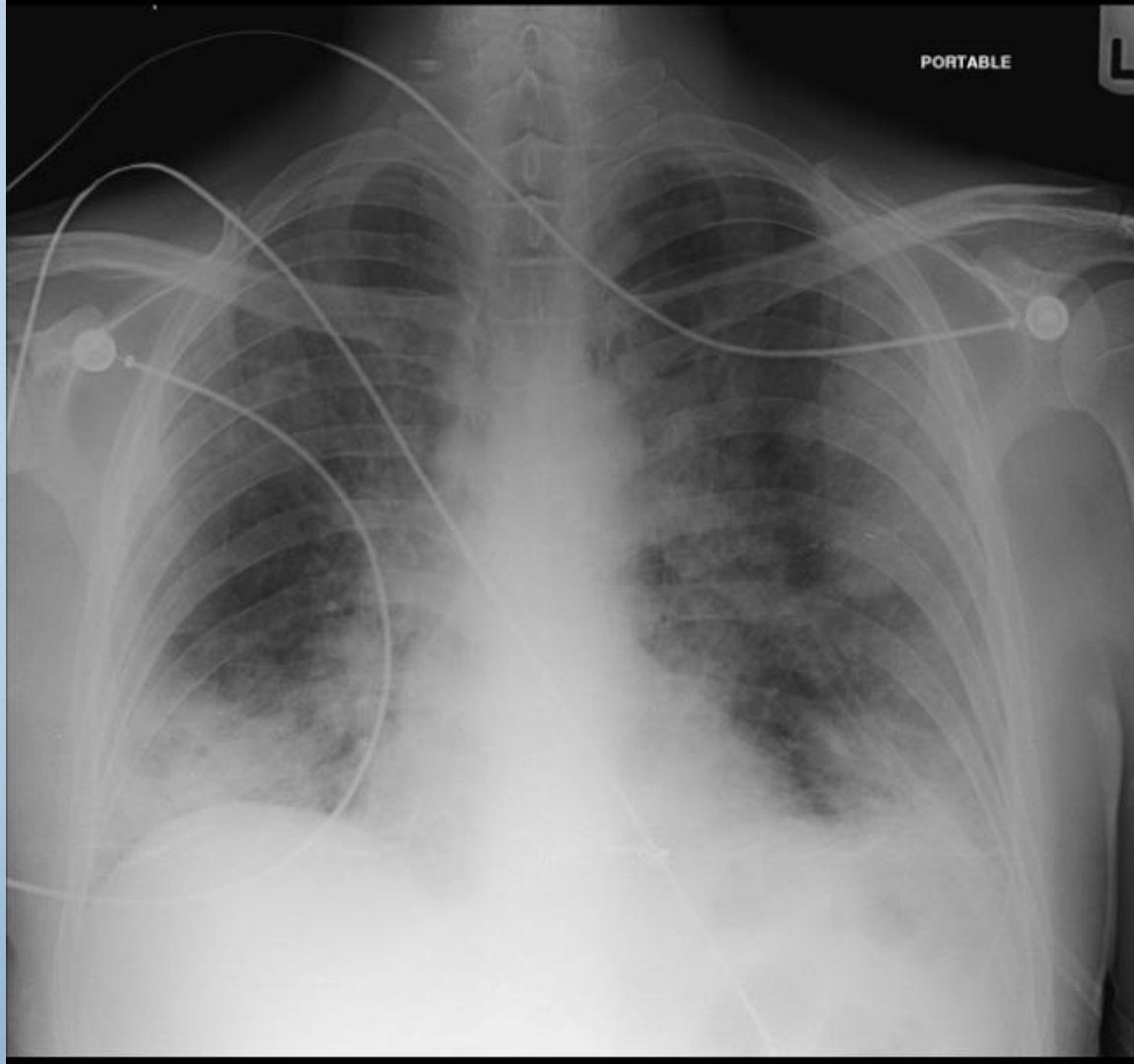
Respiratory distress & chest is clear on auscultation

- Boyles, T et al. SAHCS guidelines for hospitalized adults with advanced HIV disease. 2022
- Boyles T et al. *J Thorac Dis.* 2017

# PCP - DIAGNOSIS

- Symptoms
- Vital signs
- Examination
- CXR

Bilateral, symmetrical, interstitial infiltrate mainly in the middle and lower zones or diffuse



Amini B, Pneumocystis pneumonia. Case study, Radiopaedia.org (Accessed on 08 May 2024) <https://doi.org/10.53347/rID-35823>

# PCP - DIAGNOSIS

- Symptoms
- Vital signs
- Examination
- CXR
- No evidence of bacterial pneumonia



# PCP – SUPPORTING INVESTIGATIONS

- Sputum *Pneumocystis jirovecii* PCR

**But** it doesn't differentiate between colonization and infection

# PCP – REFER TO HOSPITAL



RR >24/min



Cynosis



Sats < 94% RA



SOB with minimal effort

- Breathing image: Freepik
- Oximeter image: Flaticon.com
- NDOH. Primary healthcare STG and EML. 2020

# PCP – BEFORE TRANSFER



Oxygen to keep sats > 94%



Give first dose of TMP-SMX IV/PO

3 tablets (80/400mg) <60kg

4 tablets (80/400mg) >60kg



Stat dose of prednisone 80mg PO

# PCP – IN HOSPITAL

- Ventilatory support

- TMP-SMX

IV if hypoxaemic or in respiratory distress

3 tablets/vials (80/400mg) <60kg

4 tablets/vials (80/400mg) >60kg

x 21 days

- Steroids

Prednisone 80mg dly x 5 days

40mg dly x 5 days

20mg dly x 11 days

# PCP – IN HOSPITAL

- Change to oral when RR <24
- Initiate ART when the patient has improved or “turned the corner” but -/+ with 1 week
- If no improvement or deterioration consult a specialist
- 2<sup>o</sup> prophylaxis for  $\geq$  6 months until CD4 >200

# CLINICAL CASE

40yr female

- Newly dx HIV +, CD4 164
- P/w productive cough for 3 weeks, no LOW, night sweats or fever
- BP 116/78 HR 106 T 37° RR 20 Sats 96% RA

Significant axillary lymph nodes

Chest: Crackles RLZ

Abdo: Hepatomegaly

# POLL

What is this patient's likely diagnosis?

- A. Pulmonary TB
- B. Disseminated TB
- C. Pneumocystis pneumonia
- D. It can't be TB because there is no LOW/night sweats
- E. I don't know


# POLL

What is this patient's likely diagnosis?

- A. Pulmonary TB
- B. **Disseminated TB**
- C. Pneumocystis pneumonia
- D. It can't be TB because there is no LOW or night sweats
- E. I don't know



# TUBERCULOSIS – DIAGNOSIS

- Symptoms
  - Examination
  - Imaging
  - Other investigations
- 

# TUBERCULOSIS – DIAGNOSIS

- Symptoms

Cough, LOW, LOA, fever, night sweats

Sub-acute illness >2 week

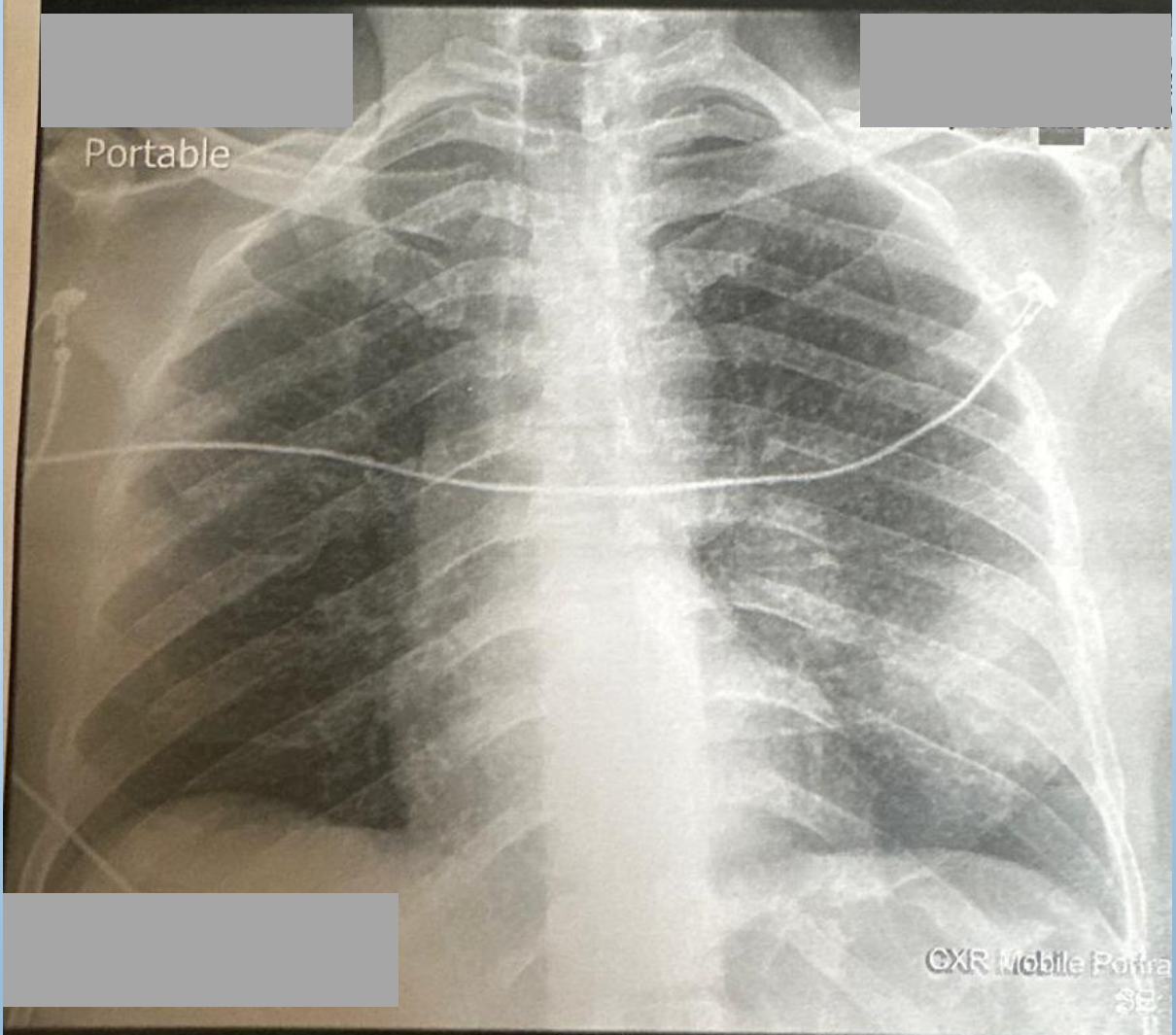
Not responding to antibiotics

# TUBERCULOSIS – DIAGNOSIS

- Symptoms
- Examination
  - Lymph nodes
  - Effusions
  - Organomegaly

# TUBERCULOSIS – DIAGNOSIS

- Symptoms
- Examination
- Imaging
  - CXR



Portable

CXR Mobile Portra  
SE






# TUBERCULOSIS – DIAGNOSIS

- Symptoms
- Examination
- Imaging
  - Abdominal ultrasound



# TUBERCULOSIS – DIAGNOSIS

- Symptoms
  - Examination
  - Imaging
  - Other investigations
- 

# TUBERCULOSIS – DIAGNOSIS



Full blood count: Anaemia strong indicator

↑ WCC is against TB

- <https://imgbin.com/png/T7P6CX3Q/red-blood-cell-png>
- Boyles, T et al. SAHCS guidelines for hospitalized adults with advanced HIV disease. 2022

# TUBERCULOSIS – DIAGNOSIS

- Full blood count



Urine LAM: All inpatients

CD4 <200 in out patients

- <https://imgbin.com/png/a7FNiRk5/biological-specimen-clinical-urine-tests-drug-test-cup-png>
- Boyles, T et al. SAHCS guidelines for hospitalized adults with advanced HIV disease. 2022

# TUBERCULOSIS – DIAGNOSIS

- Full blood count
- Urine LAM



Sputum TB NAAT (nucleic acid amplification test)

# TUBERCULOSIS – DIAGNOSIS

- Full blood count
- Urine LAM
- Sputum TB NAAT



TB blood culture

# TUBERCULOSIS – DIAGNOSIS

- Full blood count
- Urine LAM
- Sputum TB NAAT
- TB blood culture



Lymph node FNA Xpert MTB/RIF Ultra

- [https://www.flaticon.com/free-icon/lymph-node\\_10207730](https://www.flaticon.com/free-icon/lymph-node_10207730)
- Boyles, T et al. SAHCS guidelines for hospitalized adults with advanced HIV disease. 2022

# TUBERCULOSIS – DIAGNOSIS

## Lymph node FNA



- Image by pngtree.com
- <https://freepngimg.com/png/47458-syringe-needle-png-download-free>
- <https://imgbin.com/png/a7FNiRk5/biological-specimen-clinical-urine-tests-drug-test-cup-png>

# TUBERCULOSIS – DIAGNOSIS

- Full blood count
- Urine LAM
- Sputum TB NAAT
- TB blood culture
- Lymph node FNA Xpert MTB/RIF Ultra
- Other specimens for Xpert MTB/RIF Ultra



# TUBERCULOSIS – TREATMENT

- Weigh your patients at the start and then on each follow up
- Add pyridoxine 25mg dly PO
- Prophylaxis
  - Saves lives
  - Pregnancy only if CD4 < 350cell/ $\mu$ L
  - INH x 12 months
  - Rifapentine/INH weekly x 3 months  
(>25kg, on DTG regimen & VL < 1000 for 6 months)

# THE DIFFERENCE BTWN TB, BACTERIAL CAP & PCP

<b>TABLE 9: Differing features between TB, bacterial pneumonia and PJP.</b>			
<b>Feature</b>	<b>TB</b>	<b>Bacterial pneumonia</b>	<b>PJP</b>
<b>Symptom duration</b>	Days to months	< 2 weeks	< 12 weeks
<b>Hypoxia</b>	Uncommon	Uncommon	Common
<b>Haemoglobin</b>	Decreased	Normal	Normal
<b>White cell count</b>	Normal or decreased	Increased	Normal
<b>Chest x-ray</b>	<ul style="list-style-type: none"><li>• Miliary</li><li>• Nodules &gt;3 mm</li><li>• Hilar/mediastinal nodes</li></ul>	Consolidation	Interstitial infiltrate

# POLL

Who should get an influenza vaccine every year?

- A. Anyone wishing to minimize their risk of influenza acquisition
- B. Healthcare workers
- C. PLWHIV
- D. Patients on immunocompromising medication
- E. All of the above

# POLL

Who should get an influenza vaccine every year?

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- B. Healthcare workers
- C. PLWHIV
- D. Patients on immunocompromising medication
- E. **All of the above**

# VIRAL INFECTIONS – VACCINATION

- Annual influenza vaccination
- Covid-19 vaccination

The background is a solid blue color. In the top right corner, there are two overlapping white circles and a thin white diagonal line passing through them. In the bottom left corner, there are two overlapping semi-transparent spheres and a thin white diagonal line passing through them. The word "THANKS!" is centered in a white, serif font.

THANKS!