



CXR #7

WAMSS SGR 2022



Trigger

You are on your rapid 5 minute orthopaedic ward round and to your dismay, Clive, a previously well 62 year old male, 3 days post left total hip replacement, reports feeling short of breath, feverish and sweaty overnight. He also notes a sharp pain in the lower left of his chest. You remember, given your immense surgical prowess as a gun orthopaedic registrar, Clive's hip replacement had no intraoperative complications.

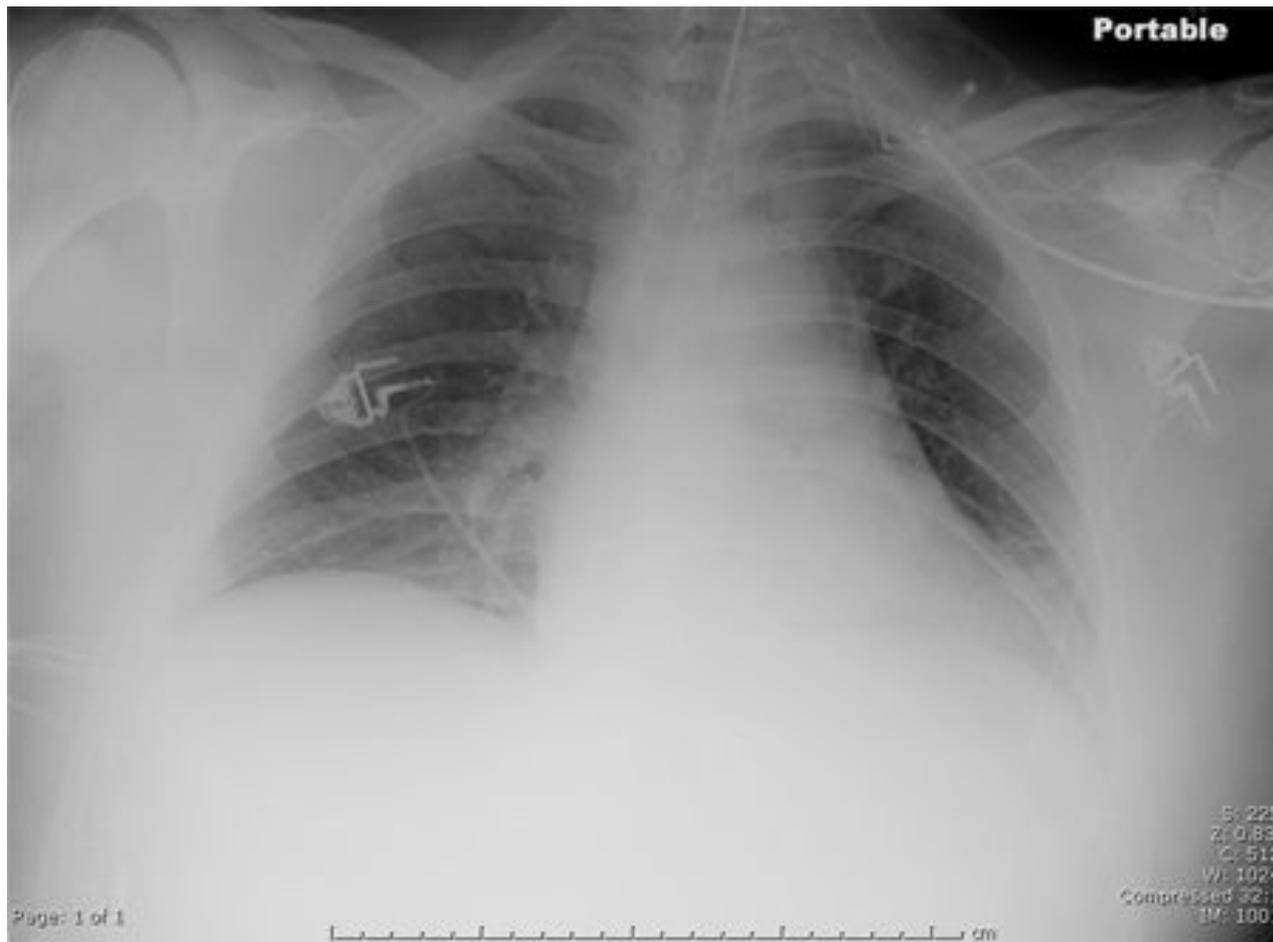
Clive appears uncomfortable and is sweating profusely, and you notice a productive cough. His breaths are shallow and rapid. He is currently on 2L of O₂.

Task: Consider initial management for Clive and interpret the CXR.



Initial management:

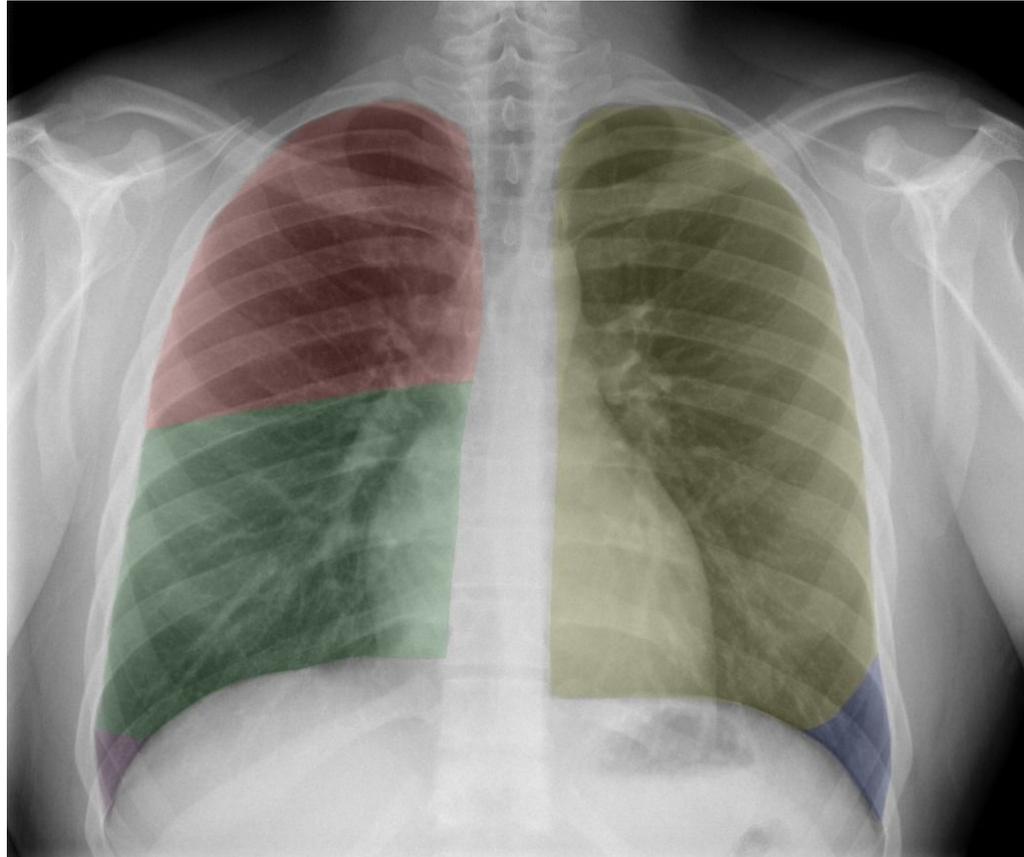
- ABCDE evaluation → ensure patient is stable
 - A: Check for airway obstruction
 - B: O₂ if SpO₂ < 94%
 - C: Assess blood pressure, urine output, heart rate
 - D: Check disability (GCS or AVPU), drug chart
 - E: Check for DVT, skin changes e.g. mottled skin
- Investigations:
 - Bloods: FBC, UEC, VBG, ?blood cultures
 - Sputum MCS
 - CXR
- Confirm diagnosis:
 - Empirical ABx
 - Pain relief (if required) start low and titrate up





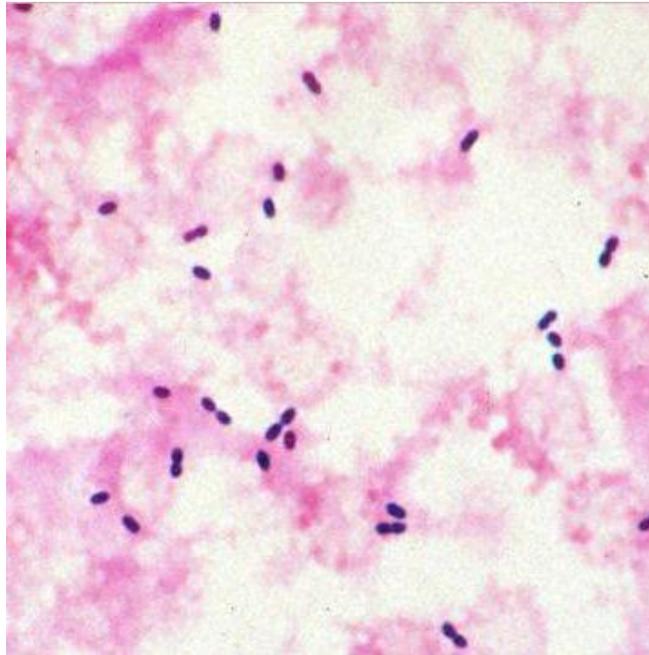
Details and demographic	AP CXR of a 62M 3 days post L hip replacement, presenting with a fever, chest pain and a productive cough
RIPE/Quality	Rotation: slight rotational artefact to the right (distance between clavicle and spinous process is wider on the right)
	Inspiration: inadequate inspiration (only 4 anterior ribs seen)
	Projection: AP
	Exposure: adequate exposure
Airways and lung fields	Trachea is equidistant between the two clavicles, suggesting no tracheal deviation Left lower lobe opacity (loss of left hemidiaphragm) Left upper lobe or lingular opacity (loss of left heart border) ?Air bronchograms in left upper lobe
Bones and soft tissue	No obvious fractures or soft tissue abnormalities 4 anterior and 8 posterior ribs visible (normal finding)
Cardo-mediastinum	Left heart border obscured by consolidation in left upper lobe/lingula. Heart size is difficult to interpret as this is AP
Diaphragm	Left hemidiaphragm obscured by consolidation in left lower lobe. Bilateral costophrenic blunting
Everything else	No free gas under the diaphragm ECG electrodes present ?NGT present
Interpretation	AP CXR of a 62M 3 days post L hip replacement, presenting with a fever, chest pain, and a productive cough There is opacification in the left lower lobe resulting in loss of left hemidiaphragm and in the left upper lobe or lingula resulting in loss of the left heart border. The costophrenic angles are blunted bilaterally. This is indicative of lung consolidation . Given the patient's recent hospital admission, and presentation of fever, chest pain, and productive cough my working differential is hospital acquired pneumonia (HAP) .

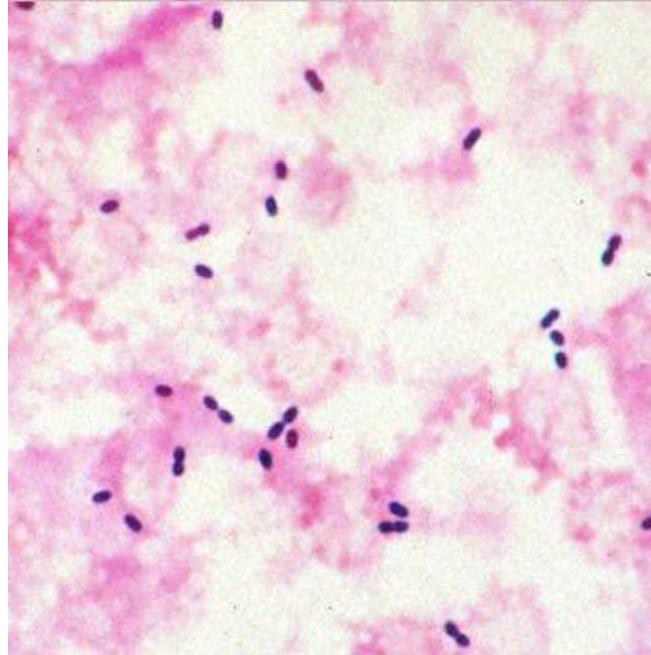
Lung lobe anatomy on CXR





Bonus question: The following bacteria was grown on sputum MC&S what do you think it could be?





Gram positive diplococci - most likely streptococcus pneumoniae



Follow-up Questions

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1. What are the most common bacterial pathogens associated with hospital acquired pneumonia?
1. What are the most commonly prescribed empirical antibiotics for hospital acquired pneumonia?
1. Clive does not respond to his empirical antibiotics and becomes acutely hypotensive, you believe he is septic. What is your immediate management?



Question 1

Early onset: (< 5 days after admission to hospital)

- *Streptococcus pneumoniae*

Late onset: (> 5 days after admission to hospital)

- *Pseudomonas aeruginosa*
- *Escherichia coli*
- *Klebsiella pneumoniae*



Question 2

Does the patient have low-moderate severity HAP or high severity HAP?

High severity HAP (any of the following):

- Tachypnoea: RR > 22
- Tachycardia: HR > 100 beats/minute
- Hypotension: systolic BP < 90 mmHg
- Acute-onset confusion
- SpO₂ < 92% on room air
- Multilobar involvement on chest X-ray
- Lactate > 2 mmol/L

CURB-65 Score for Pneumonia Severity ☆

Estimates mortality of community-acquired pneumonia to help determine inpatient vs. outpatient treatment.

IMPORTANT

We launched a [COVID-19 Resource Center](#), including a critical review of recommended calcs.

Tips for COVID-19: Use after diagnosis to determine dispo. May have some value in COVID-19.

When to Use ▾	Pearls/Pitfalls ▾	Why Use ▾
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Confusion	No 0	Yes +1
BUN > 19 mg/dL (> 7 mmol/L)	No 0	Yes +1
Respiratory Rate ≥ 30	No 0	Yes +1
Systolic BP < 90 mmHg or Diastolic BP ≤ 60 mmHg	No 0	Yes +1
Age ≥ 65	No 0	Yes +1

0 points

Low risk group: 0.6% 30-day mortality.

Consider outpatient treatment.

Copy Results 📄

Next Steps »»



Question 2

Low to moderate severity HAP:

- Oral amoxicillin+clavulanate 875+125 mg (augmentin) - 12 hourly for 7 days

High severity HAP:

- IV piperacillin+tazobactam 4+0.5 g (tazocin) - 6 hourly and review in 24 hours

(If septic consider sepsis management)

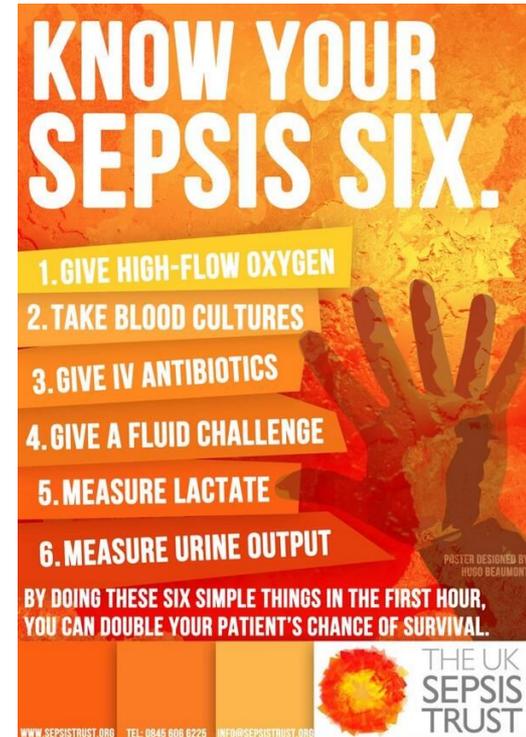
Question 3: The Sepsis 6 - Give 3, Take 3

Give 3

- 1. Empirical antibiotics**
 - a. Continue tazocin
- 2. IV fluids**
 - a. 30mL/kg in the first hour (BP > 90 mmHg)
- 3. Oxygen**
 - a. Maintain SpO₂ > 92%

Take 3

- 1. Lactate**
 - a. VBG - > 2 mmol/L indicates sepsis
- 2. Blood cultures**
 - a. 2 bottles x 2 sites
- 3. Urine output**
 - a. Aim for 0.5mL/kg/hr





Thank you!

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