

REFERRAL AND DISCUSSION CASE 1

BRIEFING

You are the **FY1 in ED** and you have clerked Mr Jones, a 73-year old male who has presented with shortness of breath.

You have ordered a **chest x-ray**, which is available to view.

You are expected to refer the patient to the respiratory specialist registrar over the telephone, covering the following:

- Summary of the case from the patient notes provided
- Systematic interpretation of the chest x-ray, including the likely diagnosis
- Appropriate further management of the patient

You should provide the specialist with the information they require.

This station will last 10 minutes.

POST-TAKE ROUND NOTES

ADULTS

University Hospitals of Leicester NHS Trust

Affix patient ID label

Hospital: LRI Ward: ED

Hospital No.: H123456

Consultant: Dr Davidson

Name: Mr Tim Jones

PC - Shortness of breath

HPC - 73 year old M was in his nursing home when he suddenly became short of breath. The nursing home staff checked his oxygen saturation, which was 86%. He says he has had longstanding shortness of breath with coughing but this felt worse. He also reports mild left-sided chest discomfort. He does feel more fatigued with reduced appetite.

PMHx - COPD, stable angina, hypertension

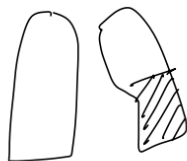
DHx - ventolin, GTN, ramipril

SHx - Lives in nursing home, visited by daughter and son, mobilised with a zimmer frame, 20 pack year smoking history, occasional drinker

FHx - nil

O/E - warm peripheries, CRT < 2 seconds

Cardiorespiratory exam: HS I+II+0
Dull percussion in left middle and lower zones



Abdomen: SNT
Calves: SNT, no peripheral oedema

Dr Sampson
FY1
GMC 622167

Tick box to ensure appropriate items reviewed
(put N/A if necessary)

Date completed: 08/11/23

VTE	Antimicrobials	Nutritional status	Maximum level of care
Drug chart	EWS	EDD documented	Dementia screen >75yrs
Blood results	IV lines	DNA-CPR status	Diabetes monitoring chart
Imaging reports	Catheter	Sepsis screen	

W1107

NEWS key 0 1 2 3		FULL NAME MR TIM JONES			
DATE OF BIRTH 01/01/1951		DATE OF ADMISSION 08/11/23			
DATE	07/11	DATE			
TIME	8AM	TIME			
A+B Respirations Breaths/min	≥25		3		≥25
	21-24	22	2		21-24
	18-20				18-20
	15-17				15-17
	12-14				12-14
	9-11			1	9-11
≤8			3	≤8	
A+B SpO ₂ Scale 1 Oxygen saturation (%)	≥96				≥96
	94-95		1		94-95
	92-93		2		92-93
	≤91		3		≤91
SpO₂ Scale 2[†] Oxygen saturation (%) Use Scale 2 if target range is 88-92%, eg in hypercapnic respiratory failure †ONLY use Scale 2 under the direction of a qualified clinician	≥97 on O ₂		3		≥97 on O ₂
	95-96 on O ₂		2		95-96 on O ₂
	93-94 on O ₂		1		93-94 on O ₂
	≥93 on air				≥93 on air
	88-92				88-92
	86-87	86%	1		86-87
	84-85		2		84-85
≤83%		3		≤83%	
Air or oxygen?	A=Air				A=Air
	O ₂ L/min	10	2		O ₂ L/min
	Device	Unlabeled mask			Device
C Blood pressure mmHg Score uses systolic BP only	≥220		3		≥220
	201-219				201-219
	181-200				181-200
	161-180				161-180
	141-160				141-160
	121-140				121-140
	111-120				111-120
	101-110	110	1		101-110
	91-100		2		91-100
	81-90				81-90
	71-80				71-80
	61-70		3		61-70
	51-60				51-60
≤50				≤50	
C Pulse Beats/min	≥131		3		≥131
	121-130				121-130
	111-120		2		111-120
	101-110				101-110
	91-100	96	1		91-100
	81-90				81-90
	71-80				71-80
	61-70				61-70
	51-60				51-60
	41-50		1		41-50
	31-40				31-40
≤30		3		≤30	
D Consciousness Score for NEW onset of confusion (no score if chronic)	Alert	A			Alert
	Confusion				Confusion
	V				V
	P		3		P
U				U	
E Temperature °C	≥39.1°		2		≥39.1°
	38.1-39.0°		1		38.1-39.0°
	37.1-38.0°	37.4			37.1-38.0°
	36.1-37.0°				36.1-37.0°
	35.1-36.0°		1		35.1-36.0°
≤35.0°		3		≤35.0°	
NEWS TOTAL	7				TOTAL
Monitoring frequency					Monitoring
Escalation of care Y/N					Escalation
Initials					Initials

National Early Warning Score 2 (NEWS2) © Royal College of Physicians 2017

BLOODS

WCC	12.2x10 ⁹ /L
Neutrophils	8.2x10 ⁹ /L
Eosinophils	0.10x10 ⁹ /L
Lymphocytes	1.5x10 ⁹ /L
Monocytes	0.6x10 ⁹ /L
Basophils	0.05x10 ⁹ /L
Platelets	450x10 ⁹ /L
Hb	14.0 g/dL

ALT	20 IU/L
AST	10 IU/L
Albumin	40 g/L
ALP	50 IU/L
Troponin	14 ng/ml
CRP	100

Na+	136
K+	3.6
Cl-	100
HCO ₃ ⁻	26
Creatinine	60
Urea	6
eGFR	>90

ECG

Sinus rhythm

CHEST X-RAY

08/11/23, 12PM, MR TIM JONES, H123456



FOLLOW-UP QUESTIONS

1. Which additional tests or investigations would you consider for this patient and why?
2. What aspects of this clinical presentation concern you, if any and why?
3. What further management approaches would you consider for this patient?

MARK SCHEME

Example referral:

Hi, my name is X and I am an FY1 in ED. Am I speaking with the respiratory specialist registrar? I would like to discuss a patient, Mr Tim Jones with you, his hospital number is H123456.

I believe Mr Jones has a left-sided pleural effusion that coincides with a potential infective exacerbation of his COPD.

S - he is a nursing home resident with a known long-standing history of shortness of breath that has been getting progressively worse, particularly this morning. Other symptoms included left-sided mild chest discomfort on a B/G of angina.

B - (B/G is nicely mentioned previously) he is a known hypertensive with no other relevant cardiac history (aside from stable angina)

A - on observation, the patient is alert but tachypnoeic. On cardiorespiratory examination, he has warm peripheries and a normal CRT. He has no evidence of heart failure in the form of raised JVP/oedema. His heart sounds are normal. However, he has left-sided reduced air entry and dull percussion in his middle and lower zones. His NEWS is 7 - he is haemodynamically stable but hypoxic on 10 L oxygen through a venturi mask and pyrexia at 37.9. His bloods showed raised WCC and inflammatory markers but normal troponins. I have his chest x-ray, would you like me to present this? (Interpretation on next page)

R - to manage his pleural effusion, I would suggest a chest drain. I also suspect he has an underlying infective exacerbation of COPD, thus I would suggest starting him on antibiotics as per local hospital guidelines. Would you be able to admit this patient under your care? Is there anything further you would suggest or you would like me to do?

Chest x-ray interpretation

This is Mr Jones' chest x-ray taken on 08/11/23 at 12 PM.

This is an AP/PA view with no rotation and adequate inspiration, penetration and exposure i.e. this is a good quality chest x-ray.

A - the trachea is central

B - the right lung field is clear, however, there is a homogeneous opacification covering the left middle and lower zones with no visibility of the left costophrenic angle

C - cardiac size/contour cannot be assessed due to the left-sided opacification

D - the right hemidiaphragm is visible, however the left hemidiaphragm is not visible, again due to the opacification

E - there is no evidence of other abnormalities such as fractures from the ribs that are visible

This chest x-ray demonstrates a unilateral, left-sided pleural effusion.

Follow-up questions

1. Which additional tests or investigations would you consider for this patient and why?

I would do an ABG in this patient to assess their oxygenation status and acid-base balance. I would take a sputum sample if the patient is able to produce anything from their cough for culture and sensitivities.

I would also arrange tests to investigate a unilateral pleural effusion including assessment of the pleural fluid using Light's criteria to determine underlying infection/malignancy. I would consider a CT chest to investigate malignancy.

2. What aspects of this clinical presentation concern you, if any and why?

Firstly, this is a large left-sided pleural effusion and the patient is significantly symptomatic with a high NEWS score. I am also concerned that this is a unilateral pleural effusion because this may suggest an underlying malignancy i.e. lung cancer, given his long-standing history of shortness of breath and significant smoking history as well as reduced appetite.

3. Are there any further management approaches you would consider for this patient?

If this patient were to have a malignancy, this would need to be definitively diagnosed with a biopsy and referred to oncology.

If the underlying cause is primarily an infection, the mainstay treatment is a chest drain and antibiotics.

He may also require escalation of his COPD management through the intervention of prophylactic antibiotics and combination inhalers as he is currently only on a ventolin inhaler.