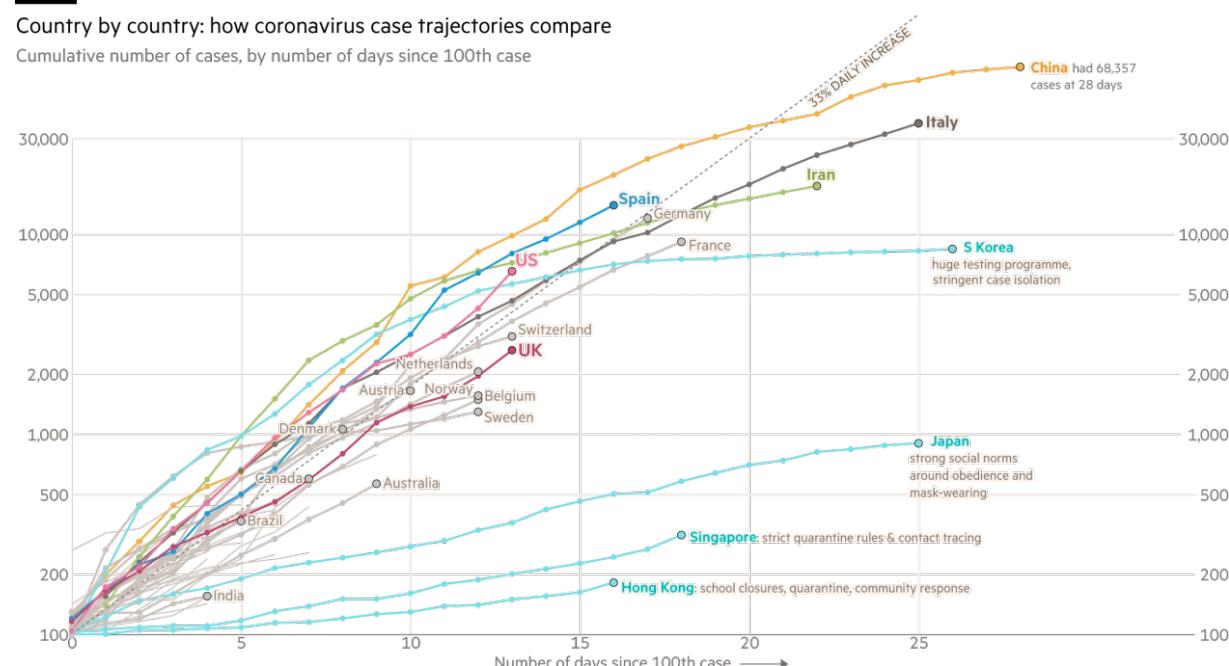
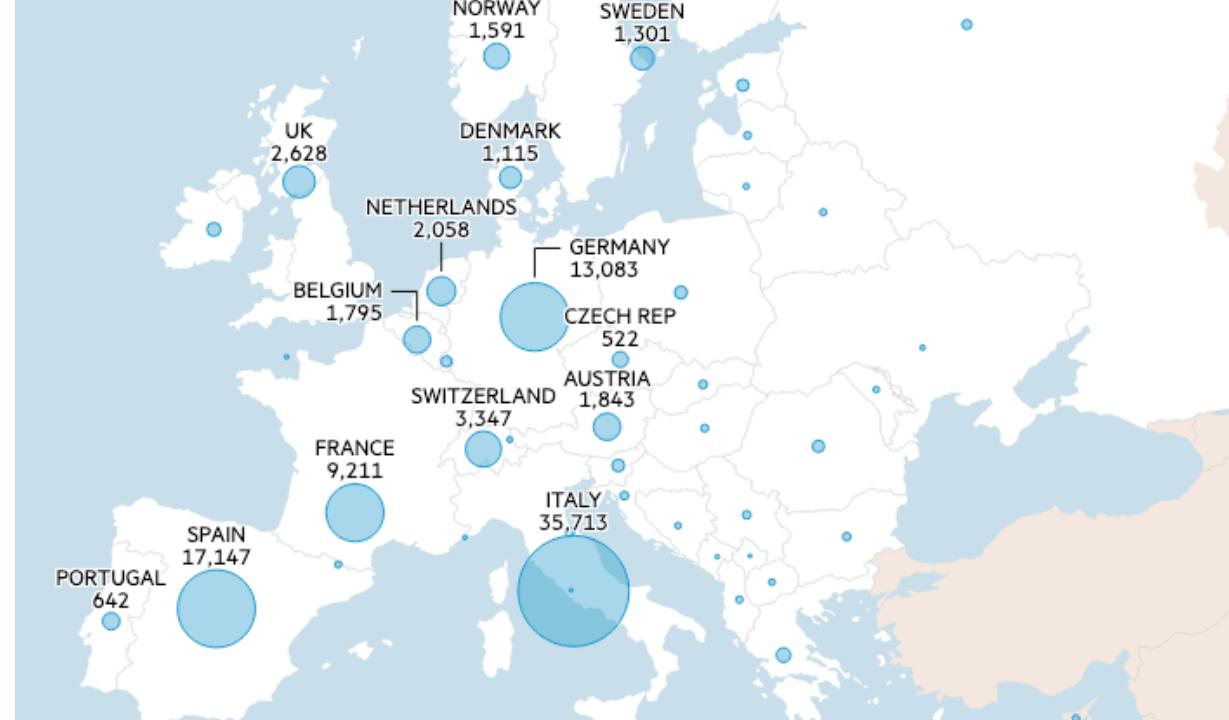


COVID notes for RFH medics

# About COVID19

- Caused by SARS-CoV-2, person to person spread:
  - Stable for hrs-days: plastic and steel (72hr) > cardboard (24hr) > copper (4hr)
  - Can be in aerosol for >3hr  
[\[https://www.nejm.org/doi/10.1056/NEJMc2004973\]](https://www.nejm.org/doi/10.1056/NEJMc2004973)
- Incubation: up to **2 weeks**
- $R_0$ : 1.4-3.9 (new infections for each infection)
- **DIAGNOSIS:** Testing for nuclear acid (**RT-PCR/NGS**)
  - Viral shedding 3-5 days after symptoms -> early false -ve test initially
  - Can test specific IgM/G ( $\uparrow$  4x in recovery phase) in high suspicion -ve pts



# RFH protocol for ?COVID

PROTECT YOURSELF (Risk assess+PPE+buddy) +

- IDENTIFY
  - NB **NO** stethoscopes
  - Airway procedures and manipulation **ONLY** with seniors present
- ISOLATE
- INFORM
  - ID SpR #1437 or via switchboard:
  - Micro/Virol SpR 9pm-9am or ID Cons 24/7

## 2: Management for suspected 2019 nCoV patients presenting to RFLNHSFT

Individuals may present in several different ways: via NHS 111, Primary Care, London Ambulance, RFH Dept, or self-presentation to A+E. If ≥ 2 patients- [ESCALATE](#)

### IDENTIFY possible cases

**A.** Consider 2019 nCoV in those with:

1. A respiratory tract illness, PLUS
2. Travel within past 14 days [to a region with current community spread of 2019 nCoV](#); OR
3. Contact with a known case of 2019 nCoV

**B.** Consider alternative [travel-associated Severe Acute Respiratory Infections \(SARI\)](#), and other common viral infections such as Avian Influenza or MERS.

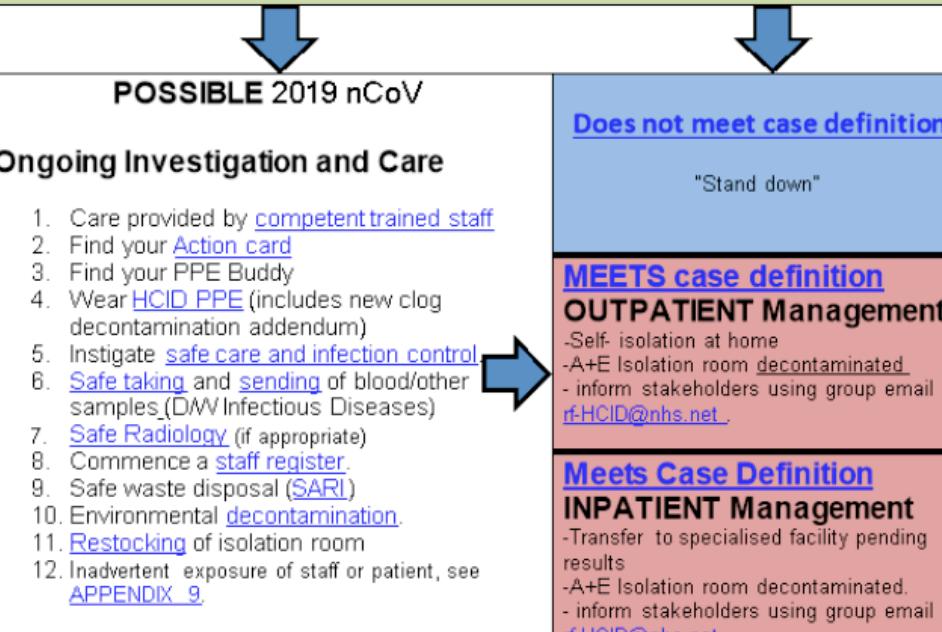
**ISOLATE:** [Move to pre-identified single room](#).

1. Wear appropriate **PPE**.  
IF Triage history already meets case definition then adopt [HCID PPE](#)  
IF more information required: [Respiratory PPE \(Royal Free\)](#)
2. Inform Nurse in charge.

### INFORM

1. Discuss with [Infectious Diseases SpR](#) (9am-9pm, b1437) or On-call Micro/Virol SpR (9pm-9am via switch) or ID Consultant (24/7). Rapid deterioration: [PART/ICU](#); Child: [Paediatrics](#)
2. Locate and review [the Risk Assessment](#).
3. Senior A+E staff must adopt responsibility for patient and staff safety

### 2019 nCoV Risk Assessment Outcome



# Presentation

- **Respiratory symptoms/Fever + travel Hx + contact Hx**

- Include within last 2-3 weeks (incubation time)
- Co-morbidities (worse/faster progression)
  - CHD, HTN, DM
- Disease clustering (symptomatic cases at home, school, offices)
- Dynamic change in global spread, travel Hx may be not as informative as before as many places now at risk.

	Mild	Moderate (80% Mild-Mod)	Severe (15%)	Critical (5%)
Clinical:	Mild Sx	Fever, respiratory symptoms (cough, SOB)	<b>RR<math>\geq</math>30 O<sub>2</sub><math>\leq</math>93% (ARDS): PaO<sub>2</sub>/FiO<sub>2</sub> ratio<math>&lt;</math>300 mmHg (40 kPa)</b>	Respiratory failure Shock ITU
Imaging (CXR, CT)	Imaging -ve	Imaging +ve <b>(pneumonia manifestations (Bilateral/Ground glass), pulmonary oedema)</b>	<b>&gt;50% lesion progression within 24-48hr</b>	

# Requesting at RFH

- Discuss with ID
- 3 canisters (@ specimen reception)
  - Category A (**confirmed**), B (**suspected**)
  - 1 & 2 = send-away protocol
  - Other samples: stool, urine, sputum should NOT be sent until exclusion
- Note about samples:
  - DO NOT shute
  - Separately, double bagged COVID samples
  - Only troponin can be added on to COVID test for ED or ITU patients.
  - Hand deliver

2019 nCoV Send-away Policy – 3 Canisters			
HAND LABEL ALL SAMPLES	Canister 1: Local Viral Testing for standard respiratory virus panel		
	Samples-Hand-label	Request	Virology Form (External Wallet)
X1 Combined Nose & Throat Swab (NPS)	Print CERNER Labels • REQUEST 'Respiratory virus Nucleic Acid Detection (PCR)' on CERNER. • Add ?2019-nCoV to clinical details		Affix CERNER labels 

HAND LABEL ALL SAMPLES	Canister 2: Reference Laboratory testing			
	Samples-Hand-label	Request	Virology Form (External Wallet)	Pre-Addressed to
X1 Combined Nose & Throat Swab (NPS)	1. Print CERNER Labels • REQUEST 'Wuhan nCoV' for each sample sent on CERNER.  X1 Lower Respiratory tract sample (Sputum or ET aspirate or BAL)	 • Select Sample type for each sample sent from CERNER drop-down menu. • Add ?2019nCoV to clinical details.	Affix CERNER labels 	PRIORITY 10 (suspected cases) PRIORITY 20 (confirmed cases) Respiratory virus unit (RVU) Public Health England 61 Colindale Avenue, NW9 5EQ Tel: 020 8327 6017

WHO TO INFORM	Canister 3: In House Supportive tests (if required)			
	Samples-Hand-label	Request	Microbiology Form (External Wallet)	Addressed to
	As Required - biochemistry, - haematology; - blood cultures	Print CERNER labels Add ? 2019- nCoV to clinical details	Affix CERNER labels   <b>URGENT HC Infectious Diseases Samples</b> <input type="checkbox"/> RRL Biochemistry (for analysis & storage of RRL samples removed from box) <input type="checkbox"/> RRL Haematology (for analysis & storage of RRL samples removed from box) <input type="checkbox"/> RRL Microbiology (Blood Cultures) (To be sent to RRL Level 3 in the Category B Box, FAO of <u>microbiology</u> with routine HSL transport).	RRL LOCAL PROCESSING  Note:  RRL process FBC & Biochemistry onsite  RRL sends Blood Cultures to HALO, Level 3 Microbiology, using routine HSL transport.

WHO TO INFORM	1. Infection Doctor: COLLECTs Pre-Labelled Boxes from RRL	2. Infection Doctor: Emails HCID Network	3. Virology Doctor: sends DAILY EMAILS to PHE Virology with list of samples sent with completed Proforma.
	RRL contact details: 9am to 5pm weekdays: Extension 32480 or 33259  Out of hours: Extension 32481 or Bleep 1686	Email brief clinical details to:- <b>RF-tr.RF-HCID@nhs.net</b> • Patient MRN, Name & DOB • Brief Clinical History • Number & Type of Specimens Sent/Canister • Time sample delivered to RRL	<b>phe.virology@nhs.net</b>  <b>4. Virology Consultant:</b> sends emails to HCID network <b>RF-tr.RF-HCID@nhs.net</b> with negative PHE results.

# Inflammatory indicators

Bloods (inflammatory response picture)	
FBCs (esp. lymphopenia)	↙ WCC especially: ↙ <b>lymphocytes</b> (downward trend -> severe) – prognostic indicator
CRP	↑ (Rapid rise/↑↑ -> secondary infection)
D-dimer	↑↑ in severe cases
LDH	↑
Procalcitonin	N/↙
Ferritin	↑
Cytokines ( <b>IL-6, IL-10, IL-4 TNF-<math>\alpha</math>, IFN-<math>\gamma</math></b> )	↑
LFTs	↑ AST, ↑ ALT

Also reports of raised troponin, CK and myoglobin

# Initial management – largely supportive

- **Oxygen:** aim for standard SpO<sub>2</sub> targets (>92-96%, 88-92% CO<sub>2</sub> retainers)
  - High flow nasal cannula: wear a surgical mask
- **Fluids:** careful fluid balance
  - Excessive fluid worsens hypoxemia
- Avoid nebulized route of administration: IV or inhaler+spacer
- **Monitors:** RR, O<sub>2</sub>, PaO<sub>2</sub>/FiO<sub>2</sub>
- Consider (suspect secondary bacterial/fungal infection) empirical antibiotics/antifungals - **d/w ID**
- Factors for **poor prognosis:** Age, co-morbidities, high SOFA, D-dimer.
- **Deterioration:** call ID consultant, A&E consultant, PART, or ICU consultant.
  - **Do not** call the resuscitation team. **Do not** move the patient to resus.
  - Likely intubate early better vs NIV; mechanical ventilation as for ARDS
- For interest, other treatment proposed/trialed include:
  - Anti-virals: lopinavir/ritonavir/chloroquine -> liver side effects
  - Cytokine cascade inhibition: methylpred

# Improving patients

- Based on discharge standards elsewhere, likely involves:
  - Apyrexial >3d
  - SpO<sub>2</sub> >93% w/o O<sub>2</sub>
  - NAT -ve x2 24hr apart (+/- -ve IgM and IgG 7d post symptoms) – exclude infection
  - Improved respiratory symptom and imaging
- On discharge:
  - Home isolation for 2 weeks (+ advice on precautions)
  - Follow-up needed (ID to advise)

# Resources and references

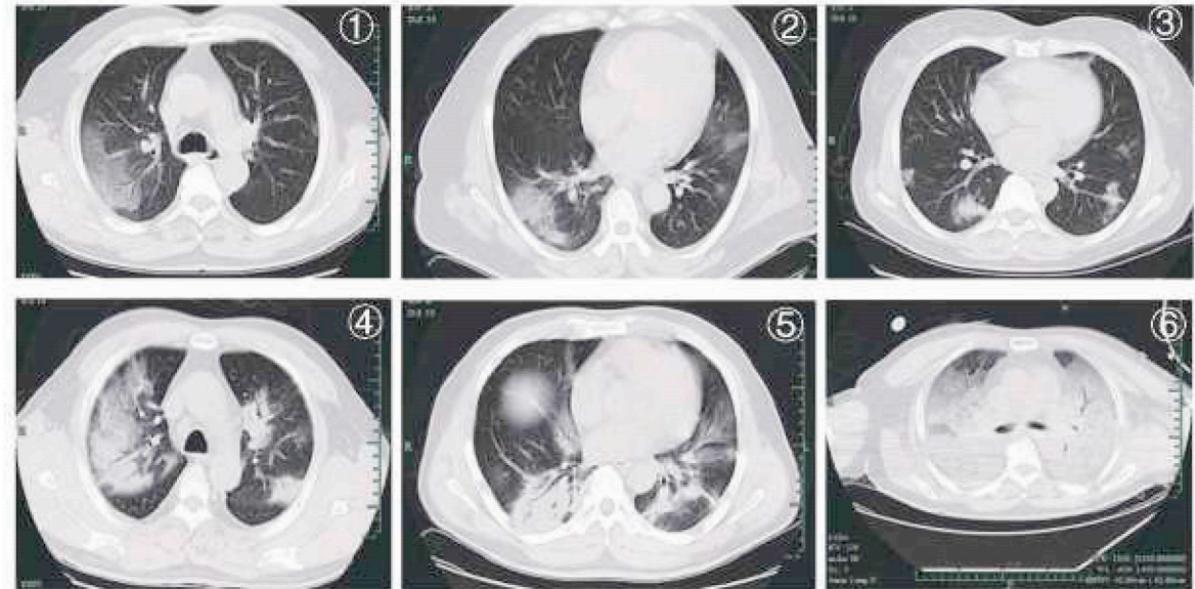
- [Global MediXchange for Combating COVID-19](#)
- [A Seattle Intensivist's One pager on COVID-19 by Nick Mark](#)
- [RFH COVID19 Operational Plan](#)
- Zhou F *et al.* [Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study.](#) Lancet. 2020 Mar 11.

# Additional slides

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# Imaging

- Serial imaging to assess progression (usually over 7-10 days)

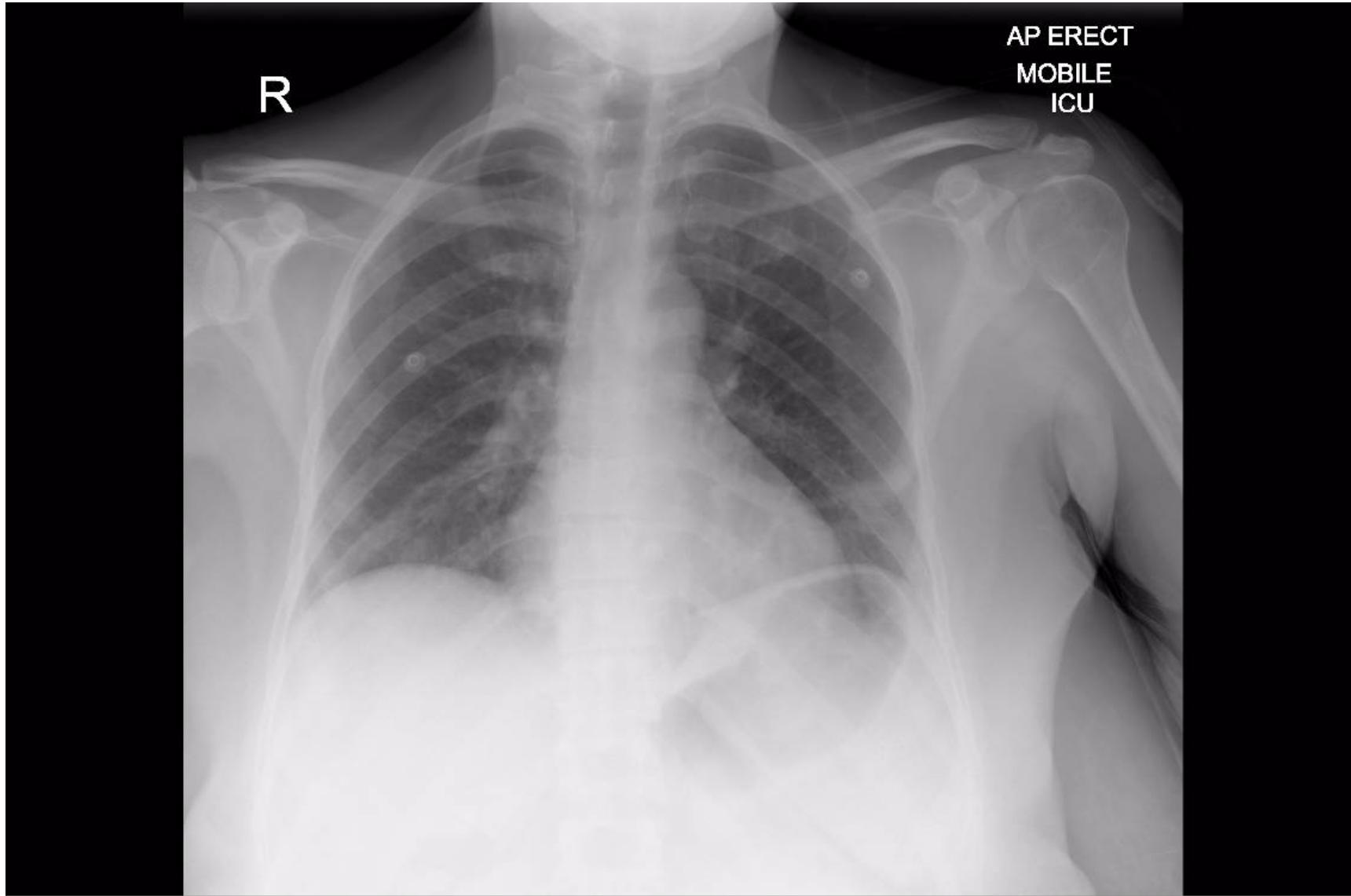


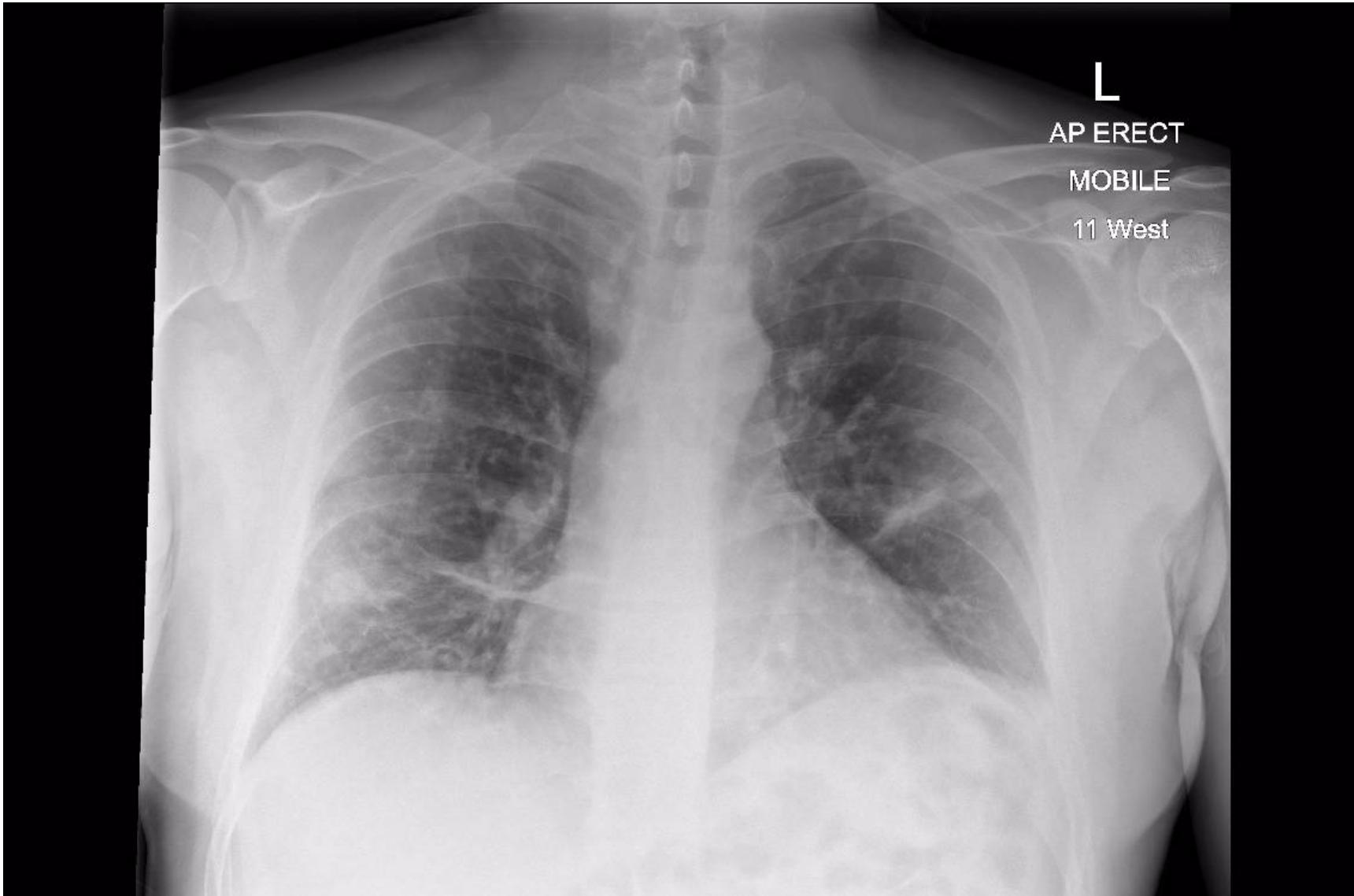
Typical CT features of COVID-19 :

Figure 1, Figure 2: patchy ground glass opacities;  
Figure 3: nodules and patchy exudation;  
Figure 4, Figure 5: multifocal consolidation lesions;  
Figure 6: diffuse consolidation, "white lung".

# Additional imaging

Slides from PPT from Claire Mason





L

AP ERECT

MOBILE

11 West

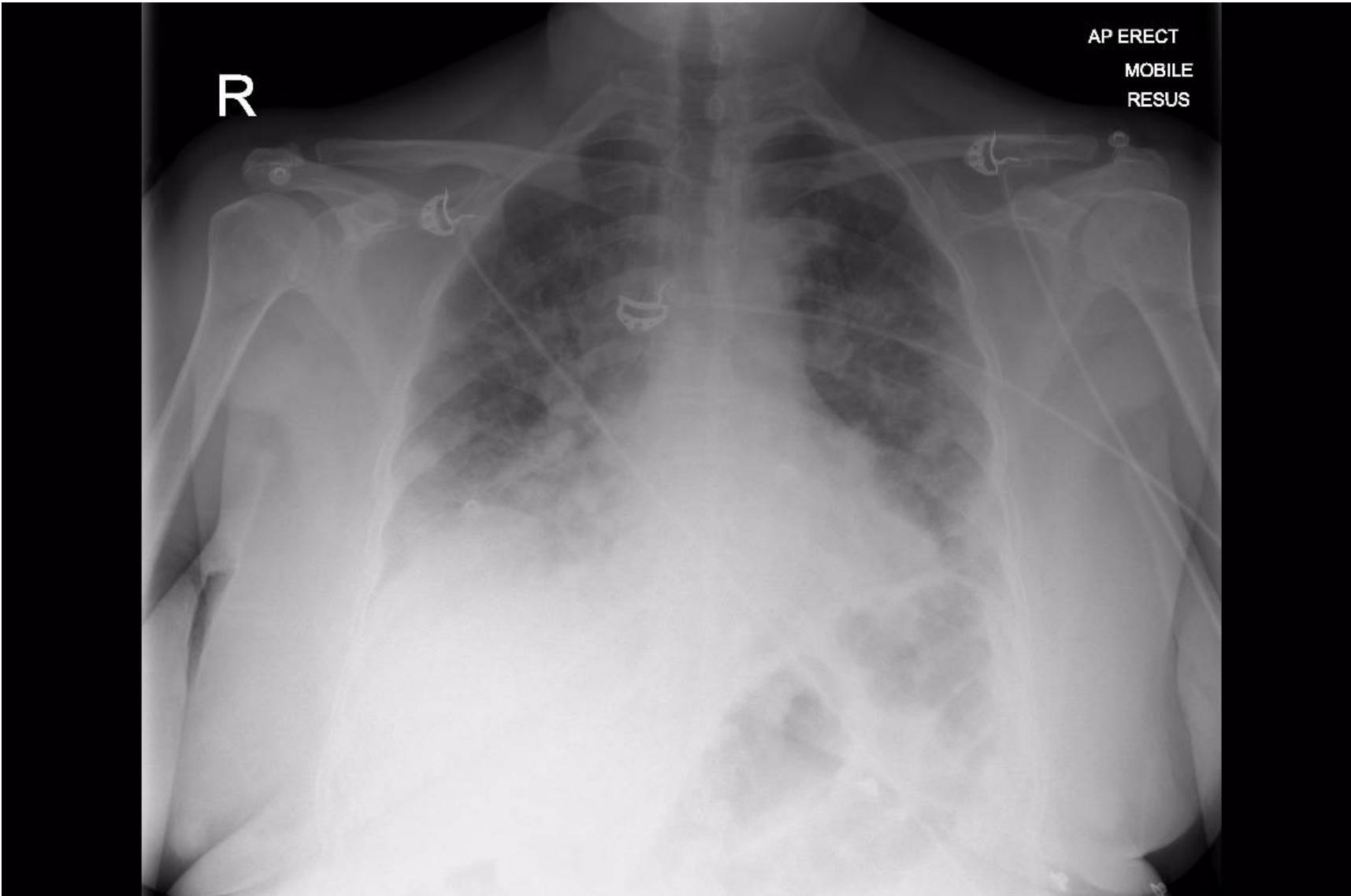


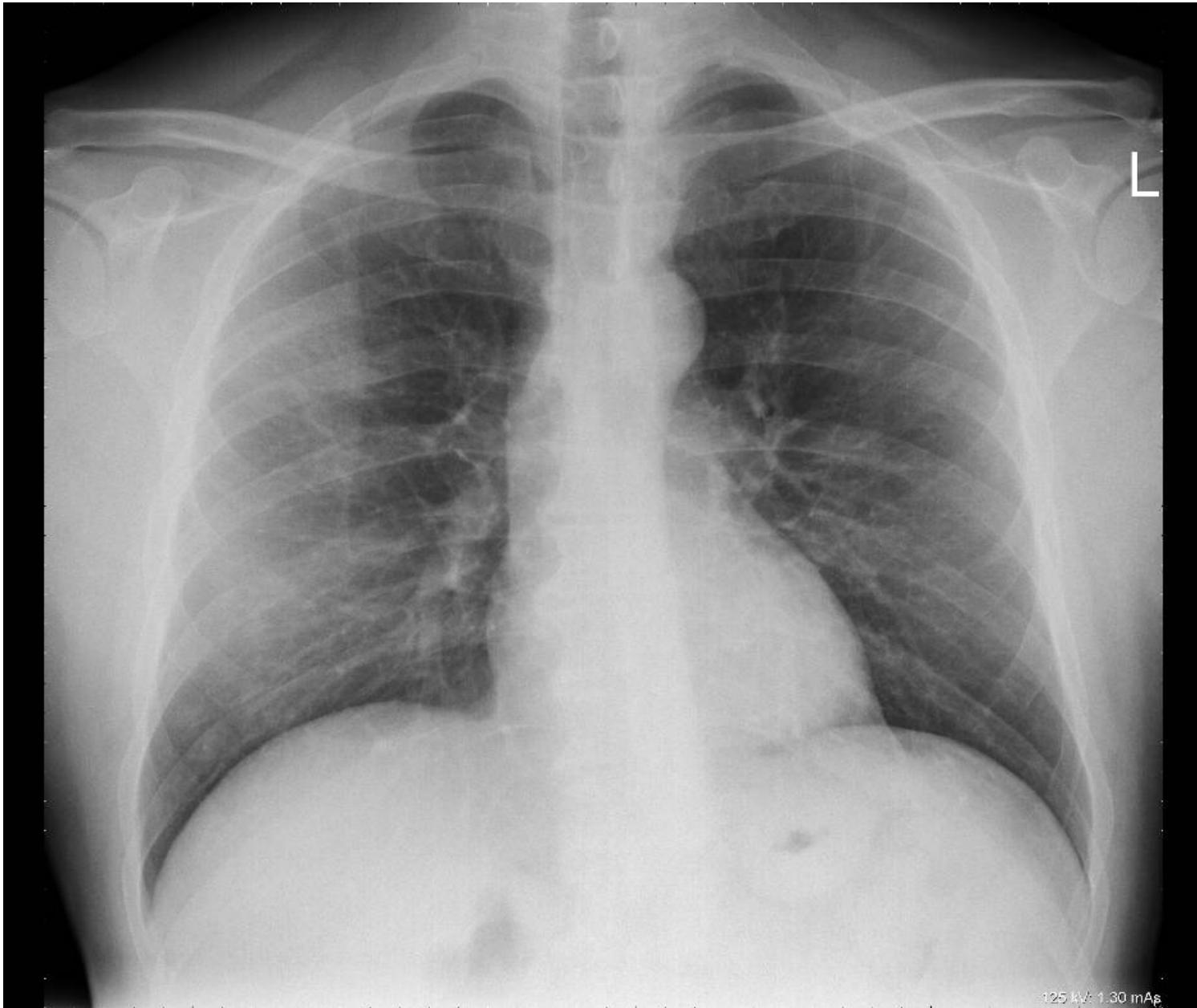
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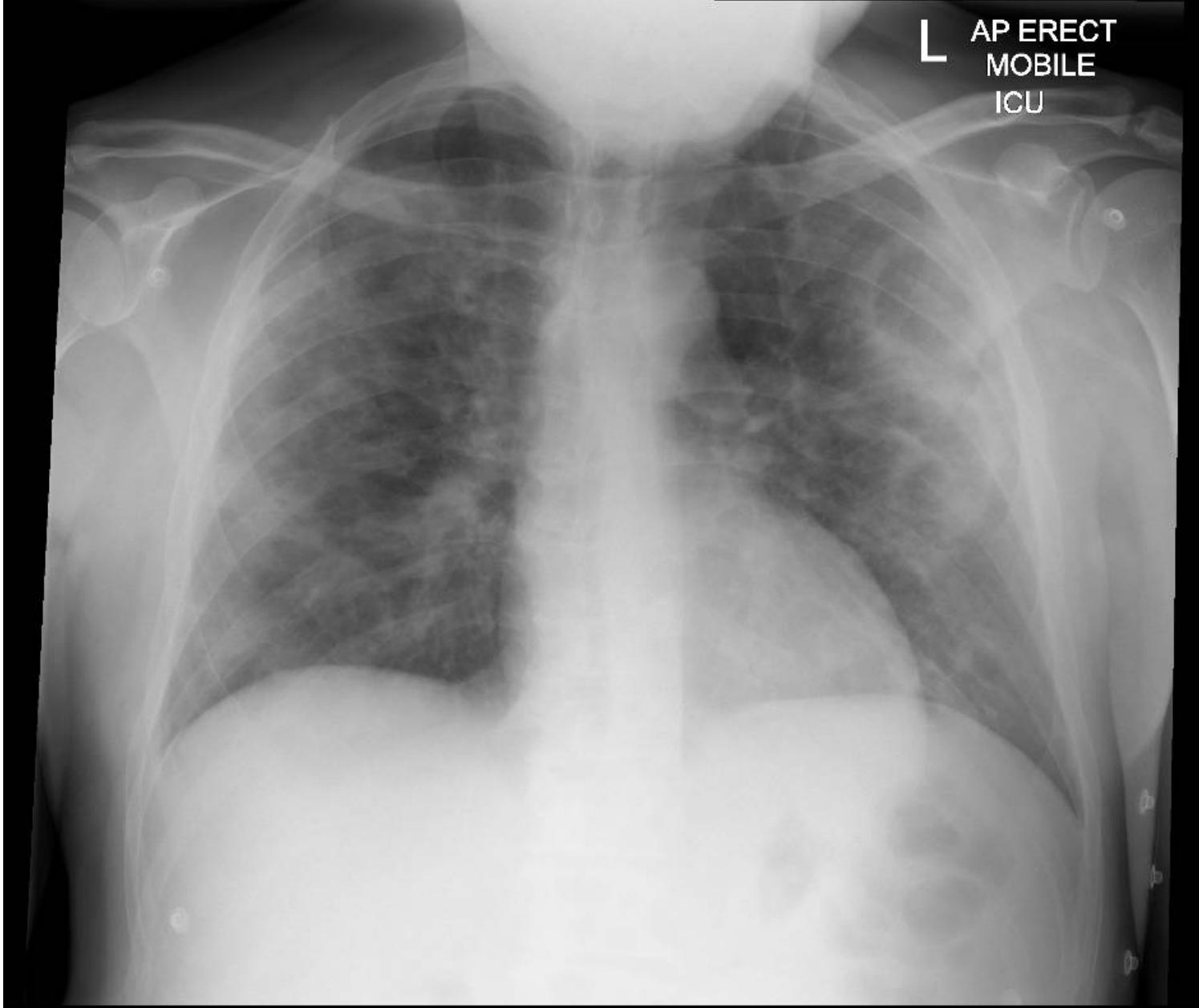
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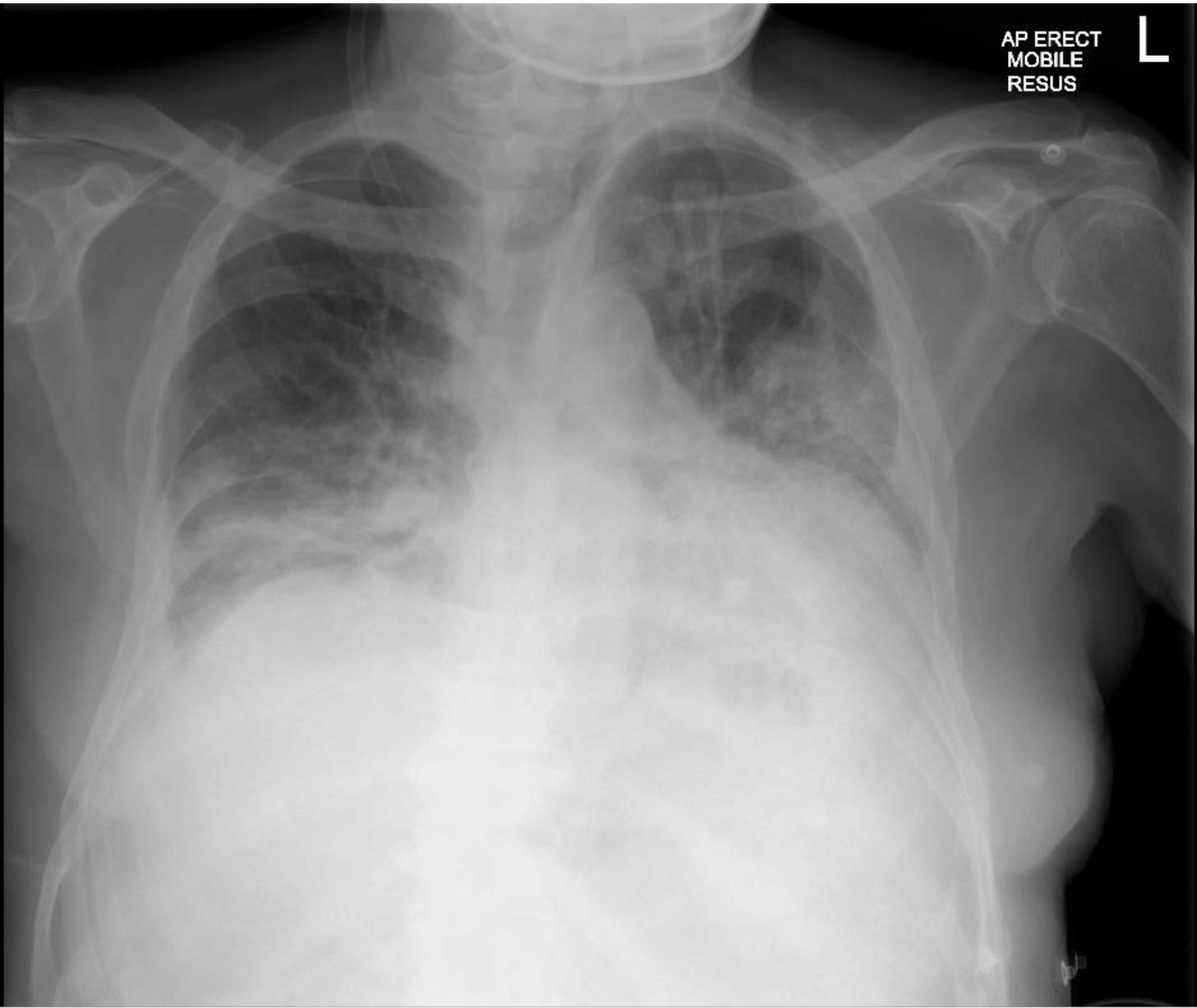
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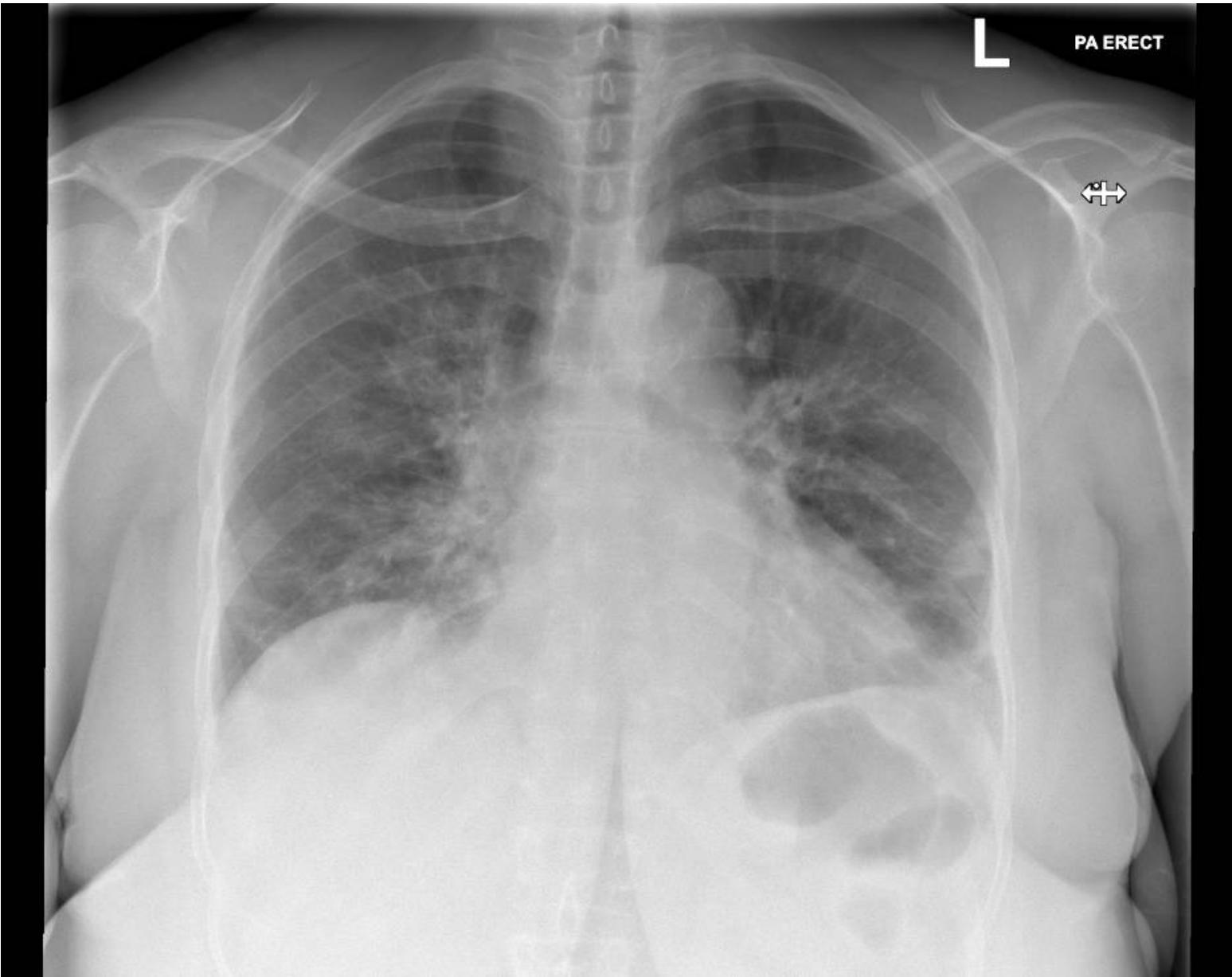




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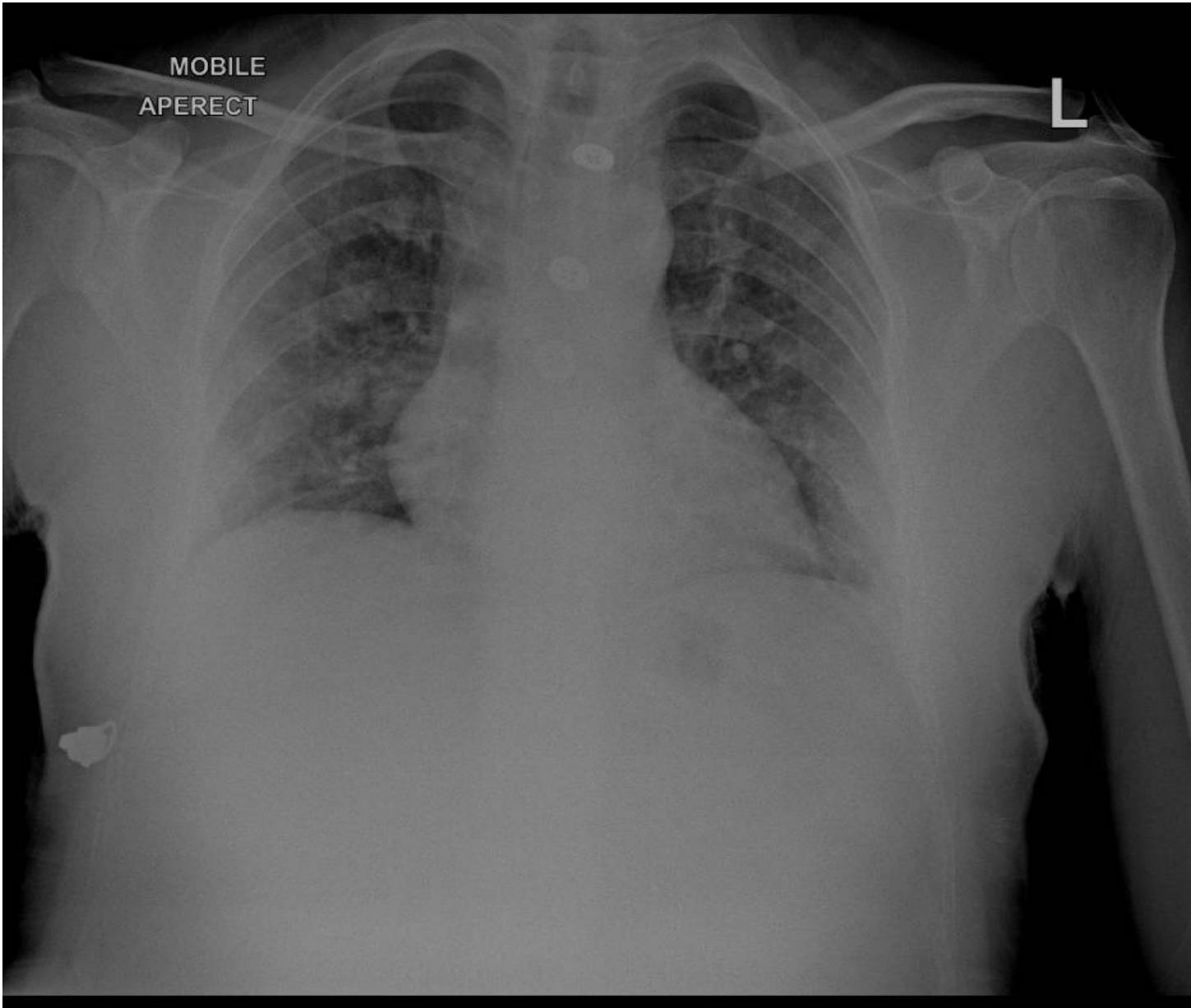


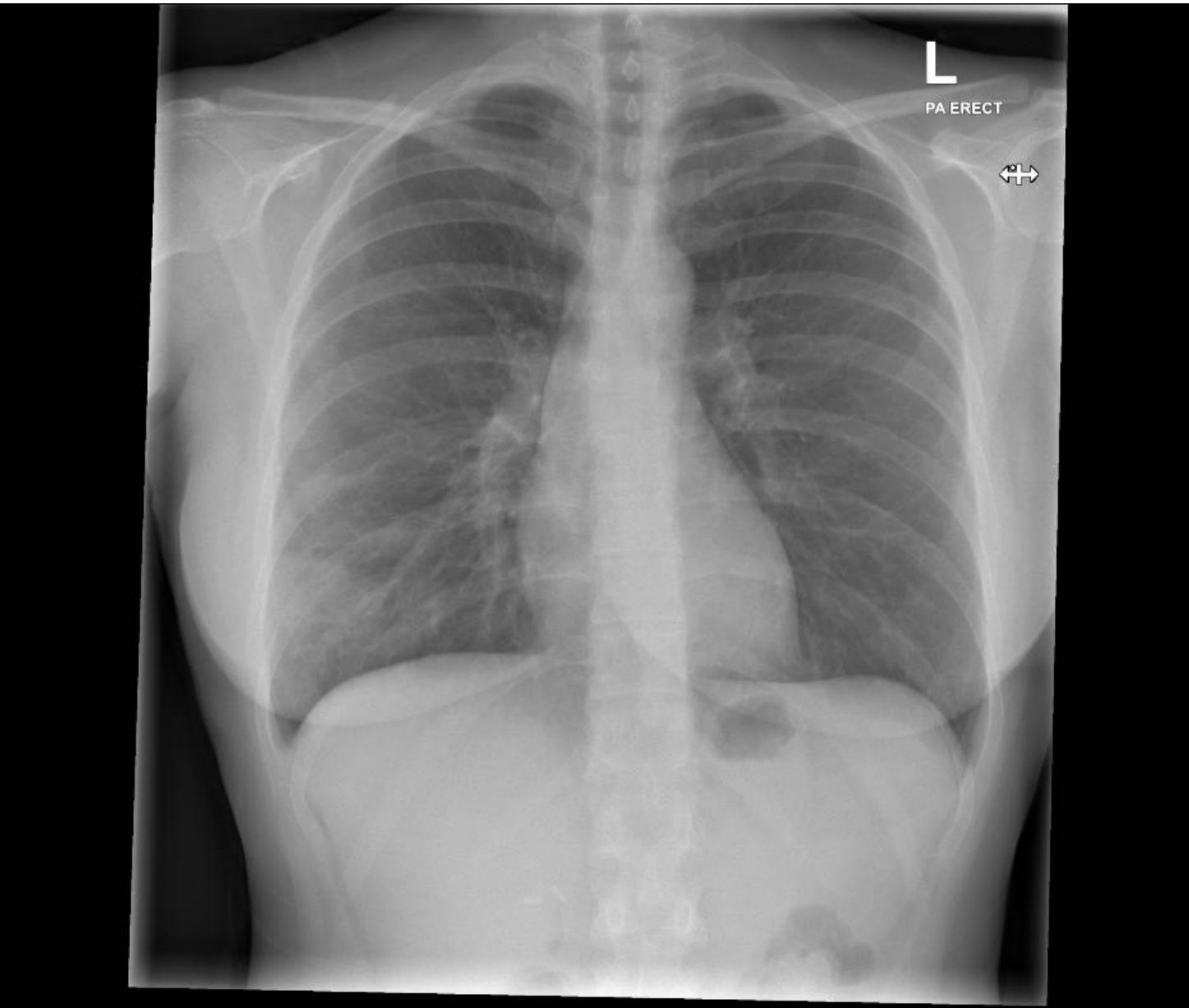


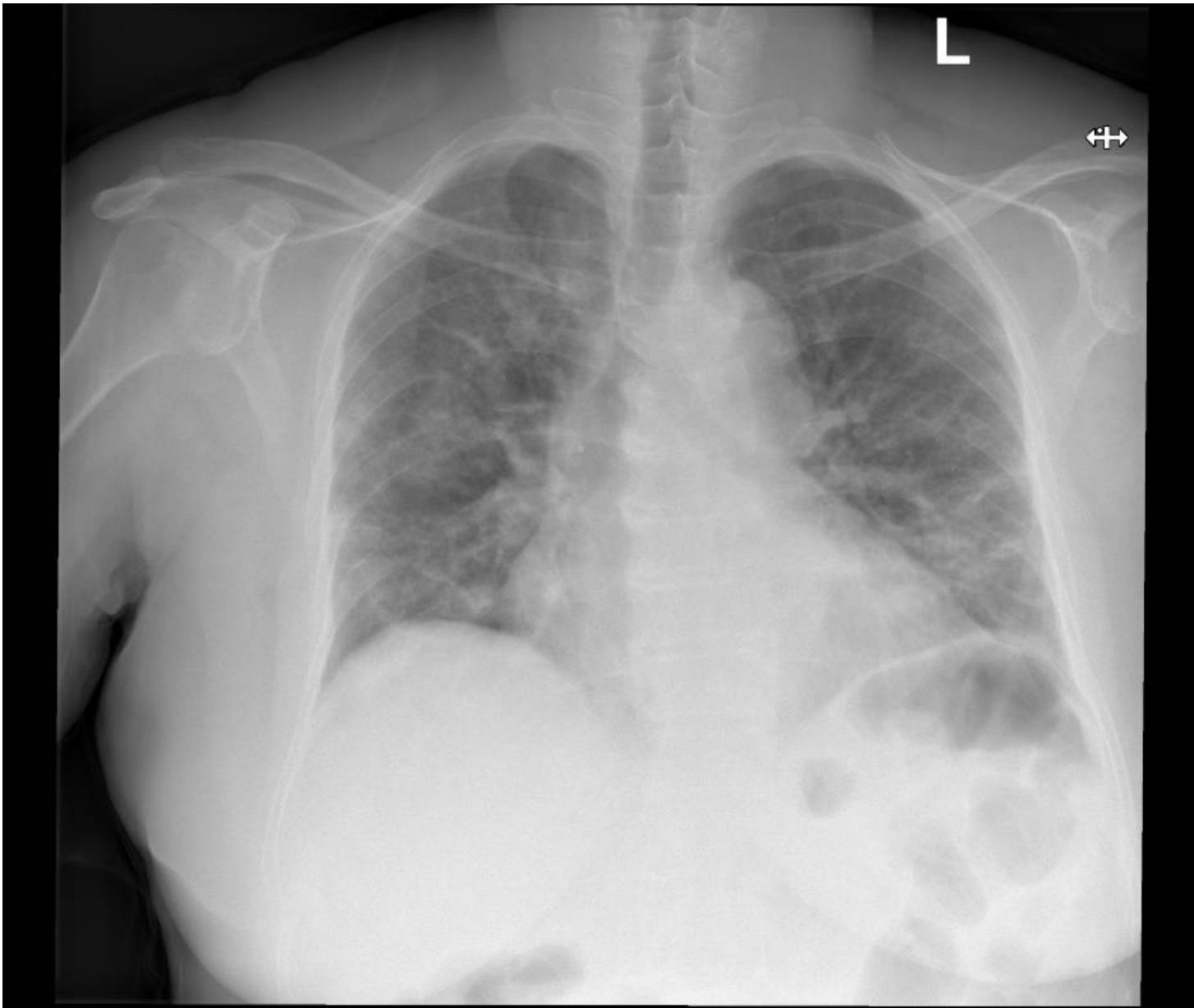


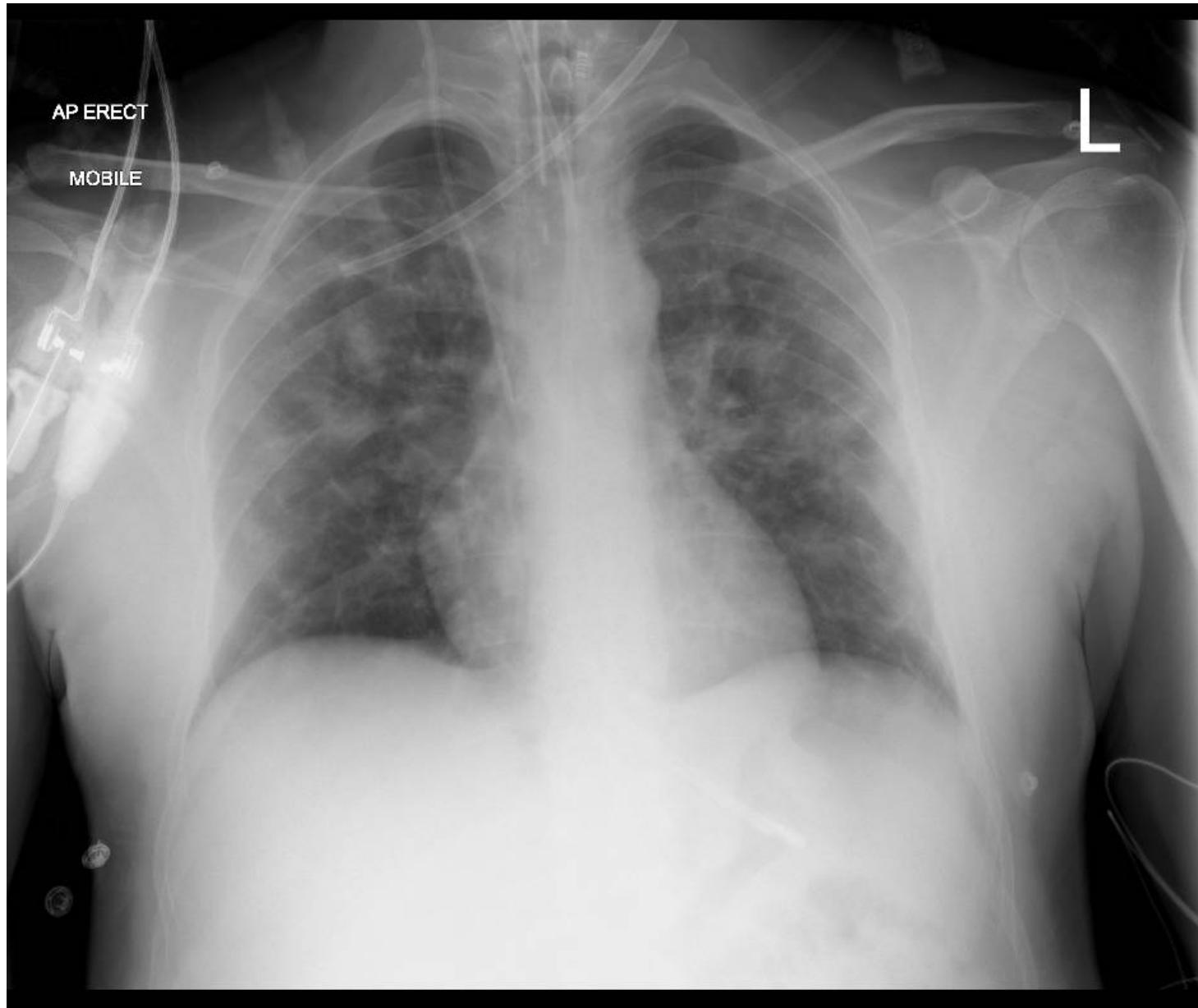
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