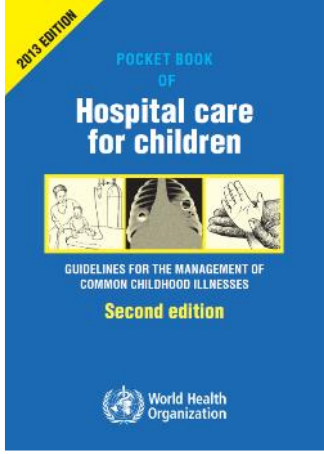
MMed and DCH Lectures

Treatment of COVID in children and adolescents

October 11, 2021

Prof Trevor Duke

Stages of management of any sick child also applies to COVID

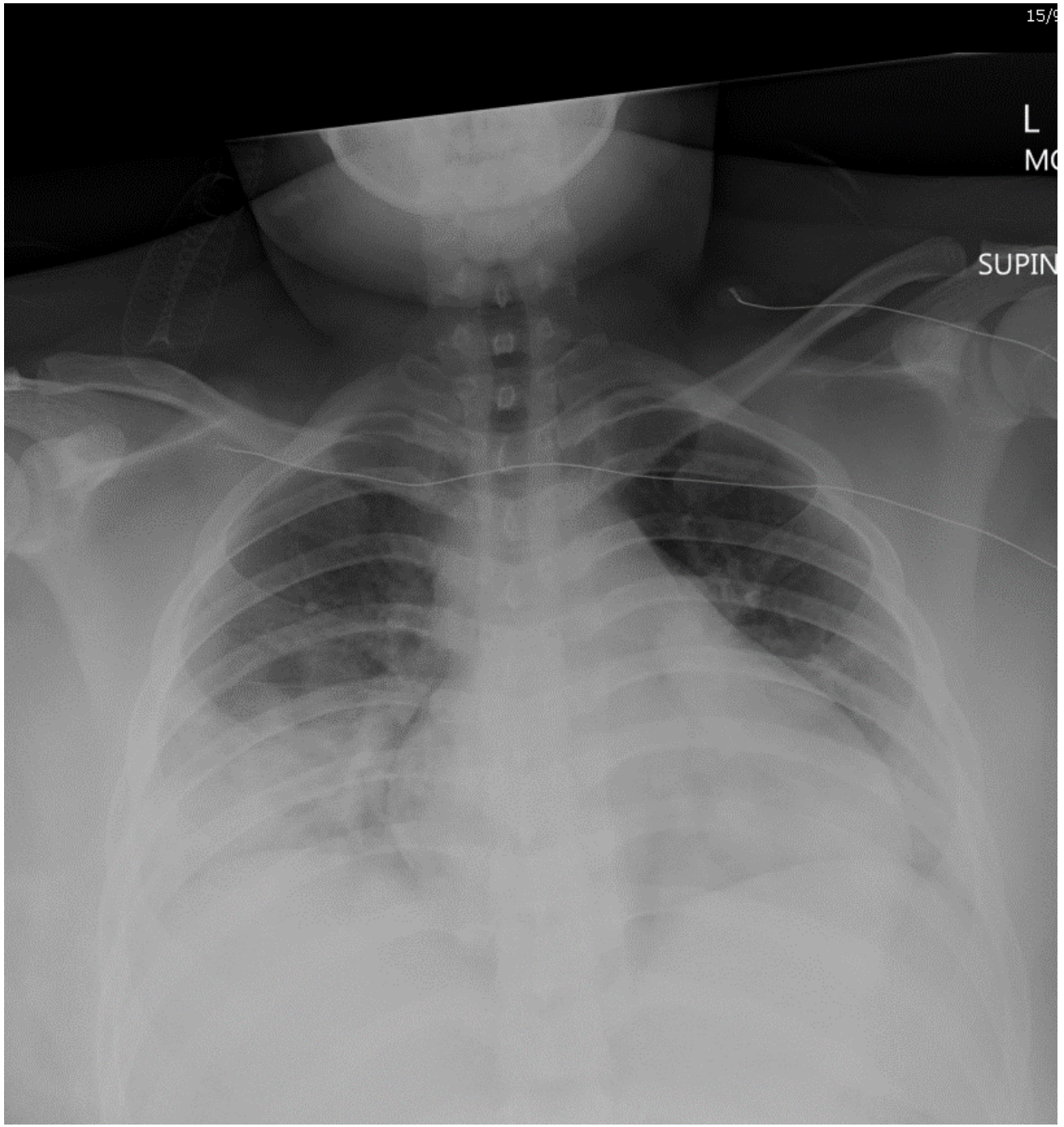


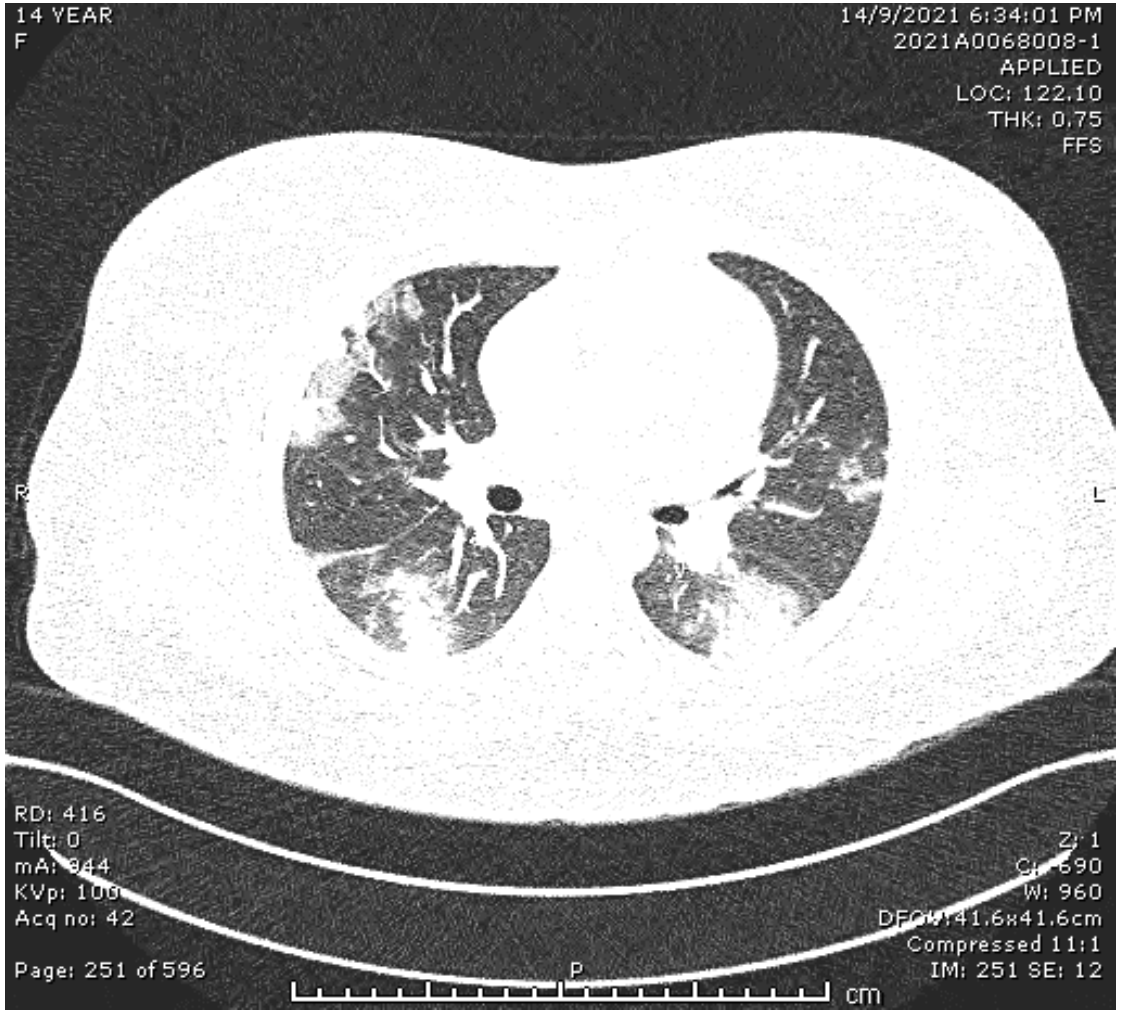
- **Triage:** Assess for emergency signs
- **Emergency treatment**:
  - Give oxygen
  - Intravenous fluid to correct dehydration if present (10-20ml/kg)
- **History / examination**
- **Diagnosis: look for secondary bacterial sepsis**
- **Treatment**
  - **Antibiotics** for sepsis / pneumonia
  - **Dexamethasone 0.15mg/kg Q12 (+/- Aspirin)**
- **Monitor** vital signs, SpO_2, hydration state, and blood pressure
- **Supportive care**: avoid over-hydration, maintain blood glucose, nutrition
- Discharge planning – are they being discharged to a safe place? Are the family OK?
- Follow-up – for the long-term consequences of COVID

Where COVID is endemic…

- Usually, minimal symptoms
- Acts like any other pathogenic respiratory virus in children
  - Pneumonia
  - Most susceptible children at risk of severe disease
- Sometimes causes:
  - immune over-activation
  - hypercoagulability
- Often a co-pathogen (with Staphylococcus, Streptococcus, or others) or bystander

- 14-year-old Samoan girl
- Day 3 of COVID
- Hypoxaemia

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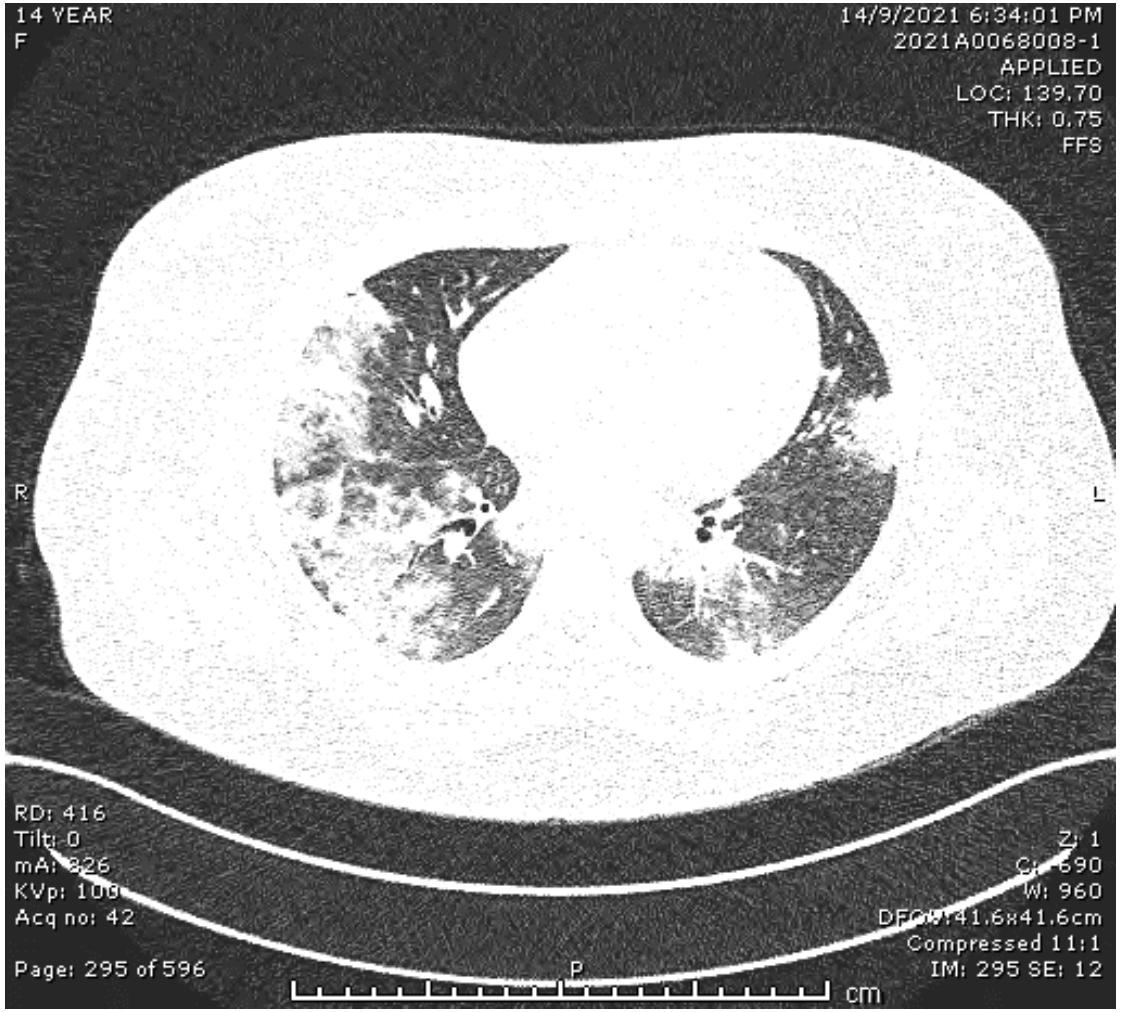
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Page: 295 of 596
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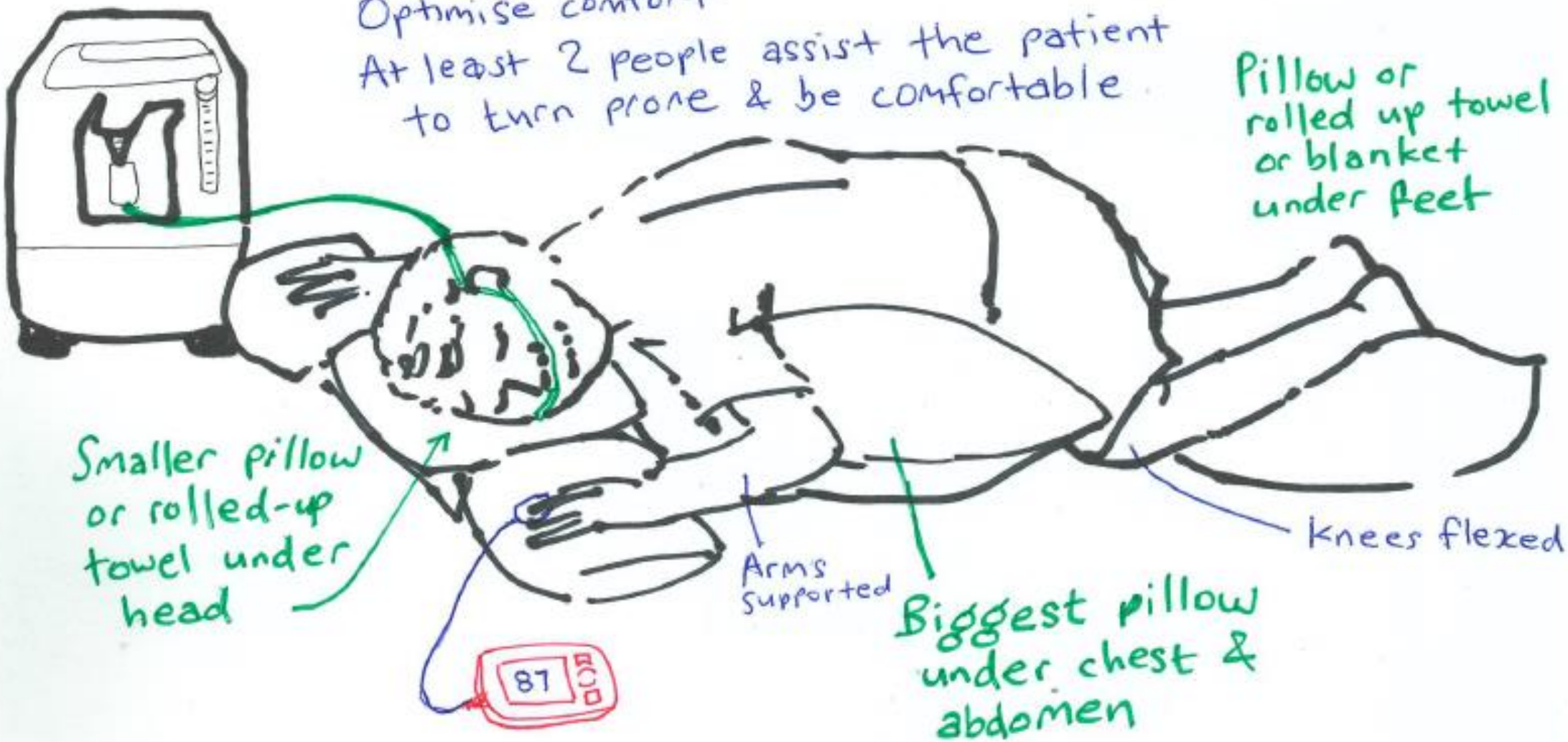
cm

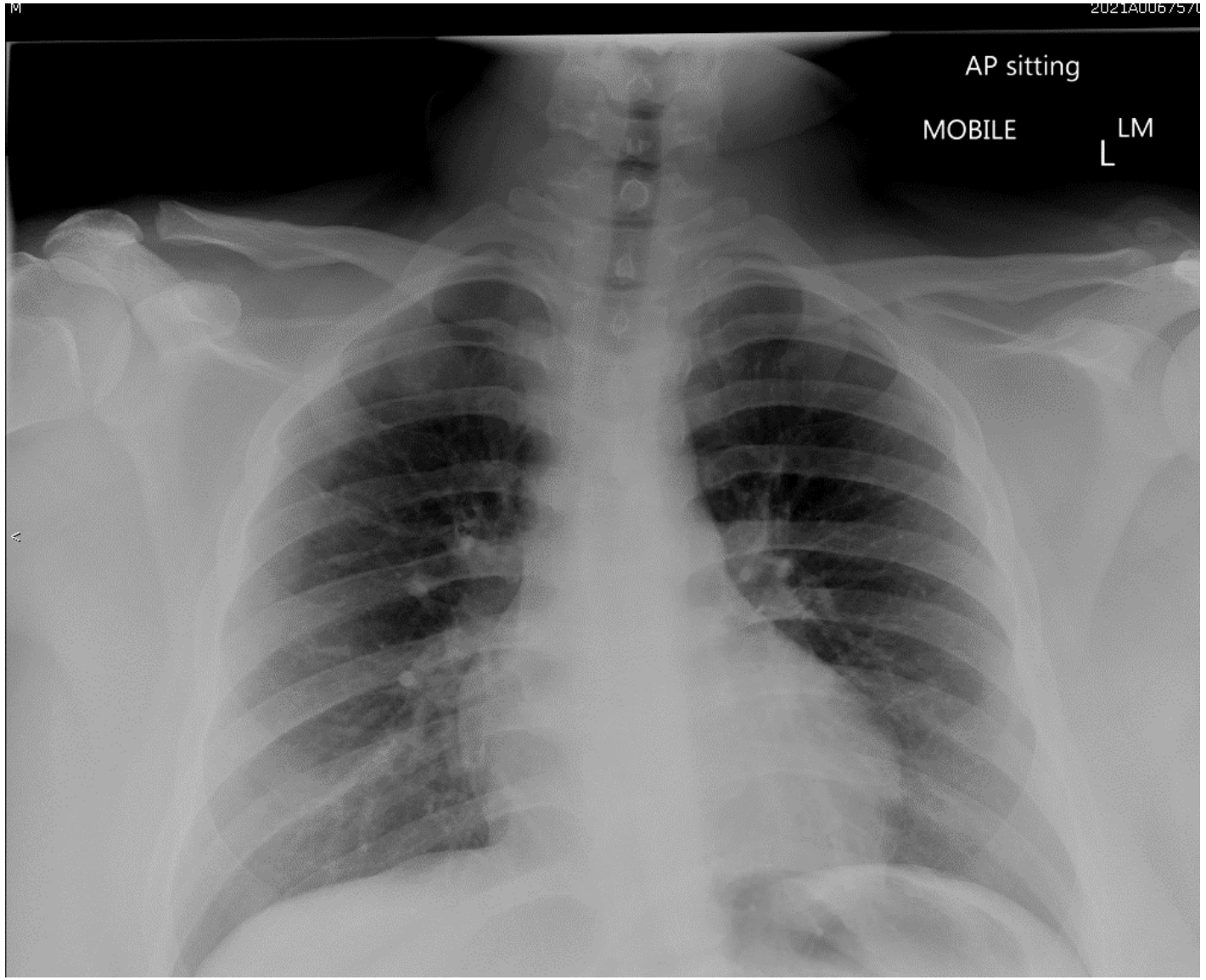
Treatment

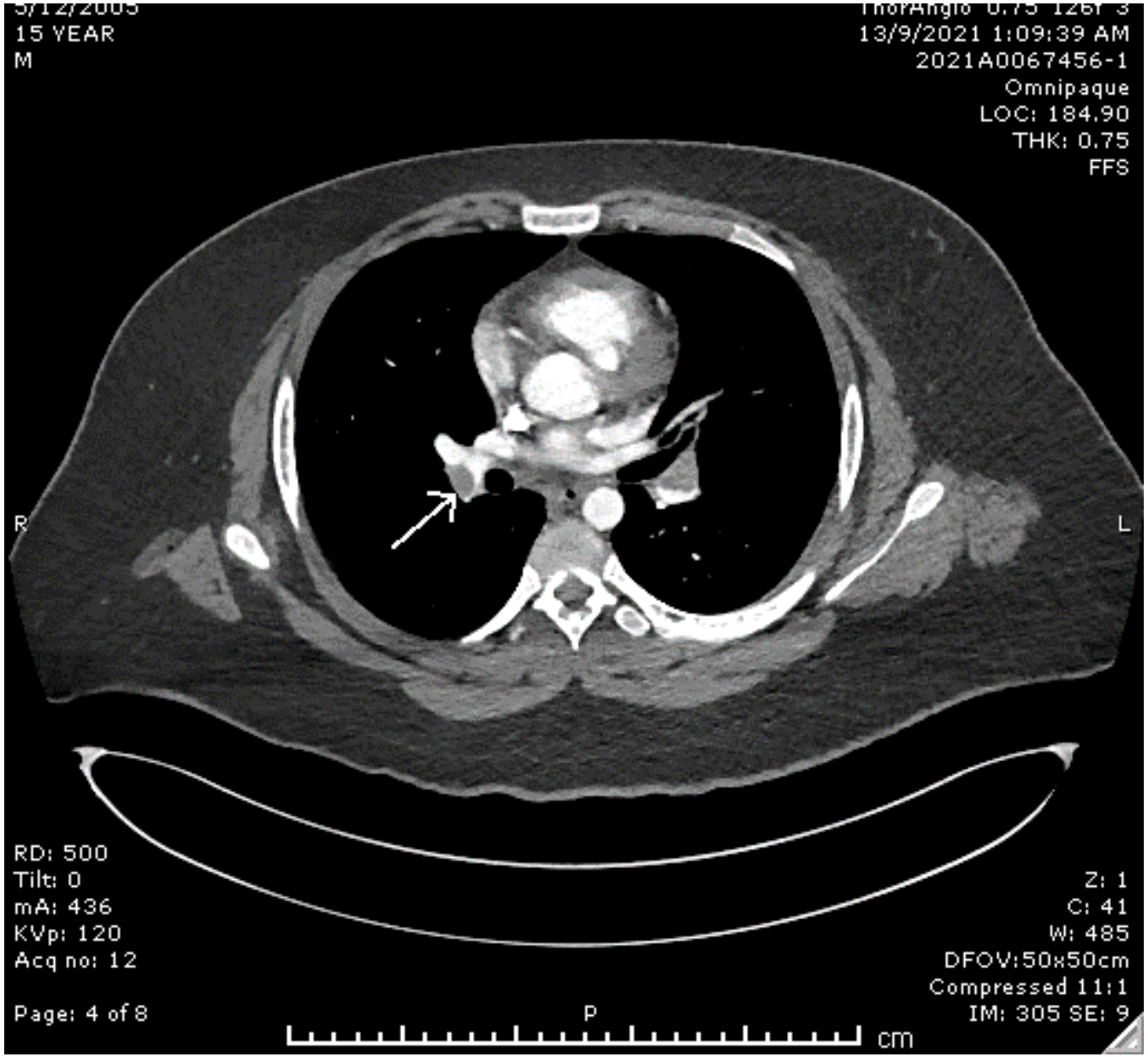
- Antibiotics
- Oxygen for 5 days, brief time on high flow
- Prone position for 2 days
- Dexamethasone
- Aspirin for DVT prophylaxis

Prepare pillows, rolled-up blankets / towels
Oxygen / CPAP
Monitor SpO2
Optimise comfort
At least 2 people assist the patient to turn prone & be comfortable



- 15-year-old boy
- Day 14 COVID
- Initially minimal symptoms
- 4 days lethargy, dyspnoea
- Swollen tender right leg

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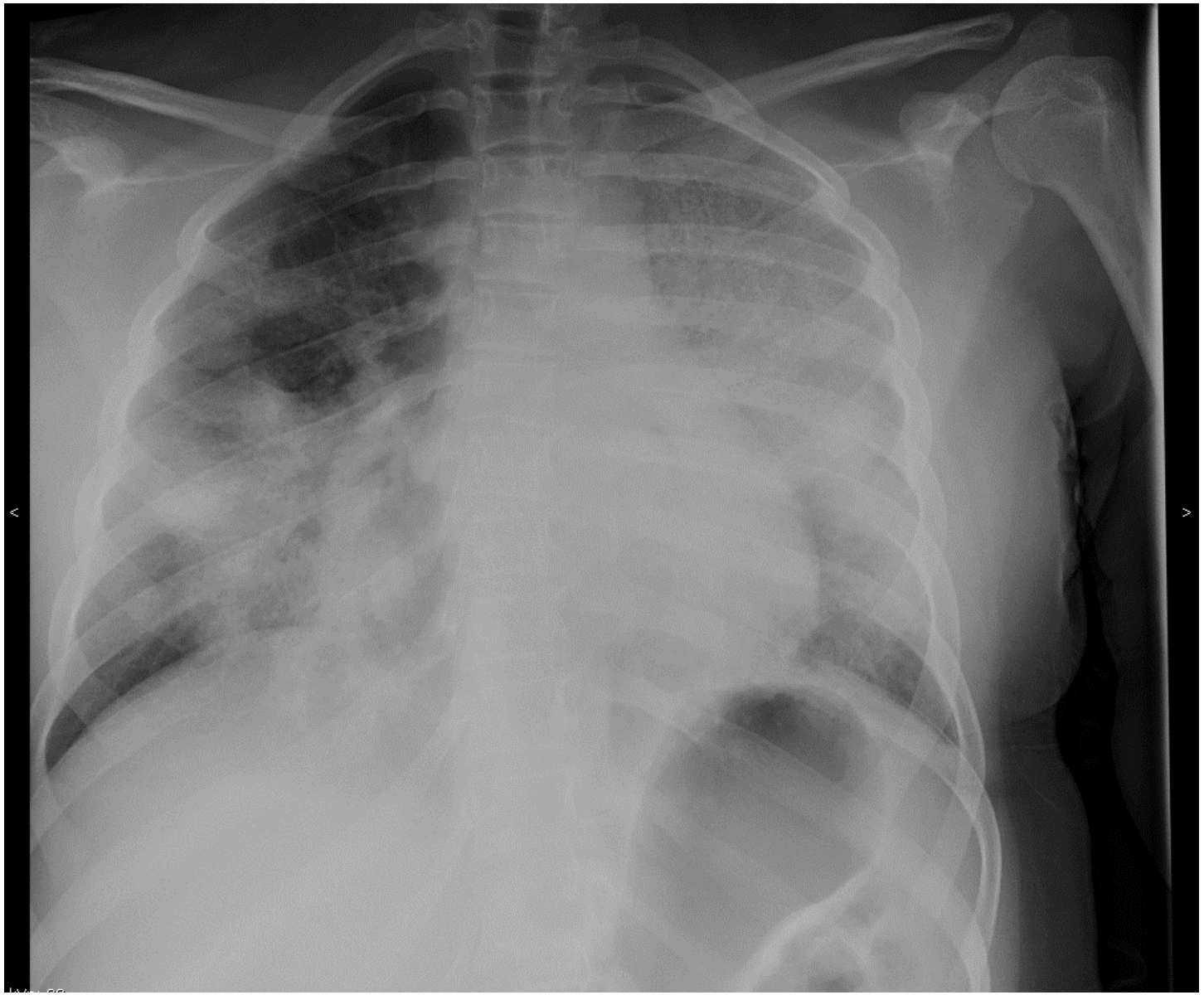
Diagnosis and treatment

- Deep venous thrombosis with pulmonary embolus
- COVID-related hypercoagulability, plus immobility (lethargic, pneumonia)
- Heparin – 20 units per kg per hour to stop further clot formation
  - Or Clexane – 1mg/kg SC BD
  - Or Aspirin – treatment dose

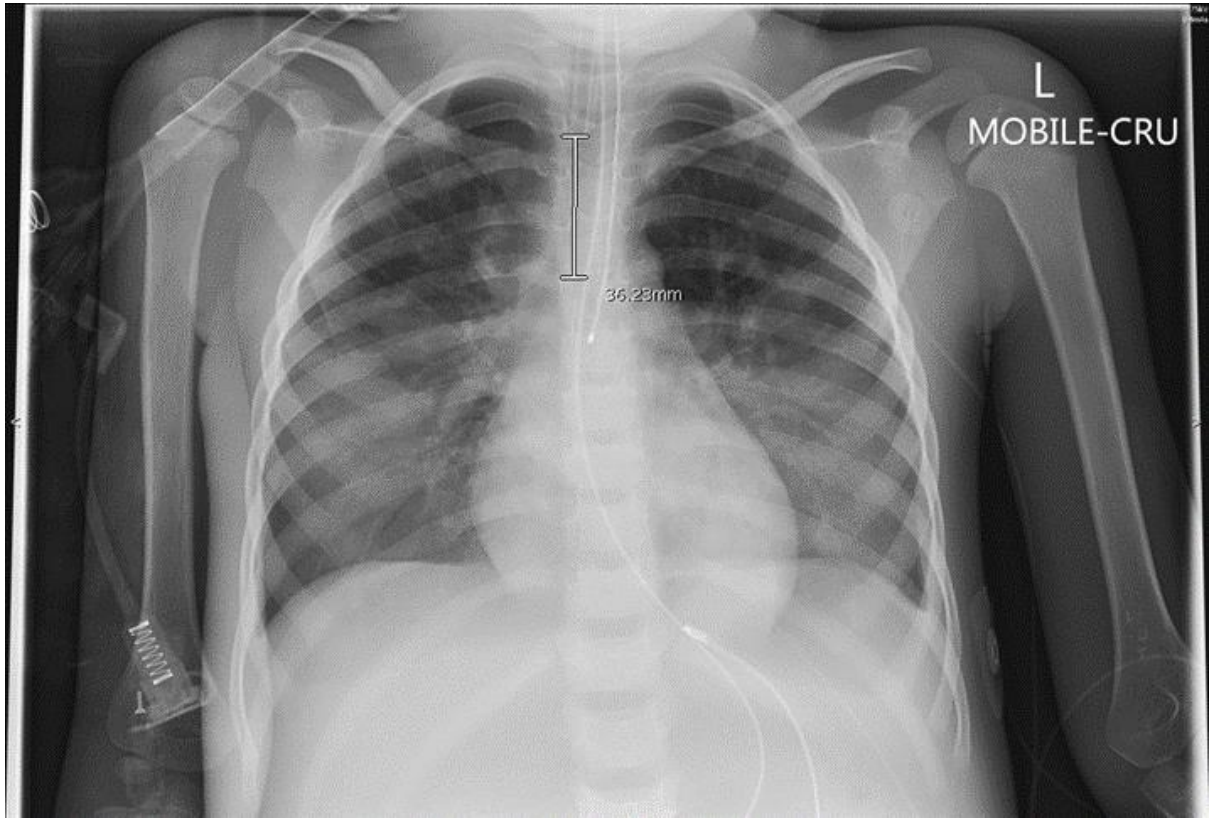
- 15-year-old girl
- Down syndrome
- Day 6 COVID positive
- Hypoxaemia

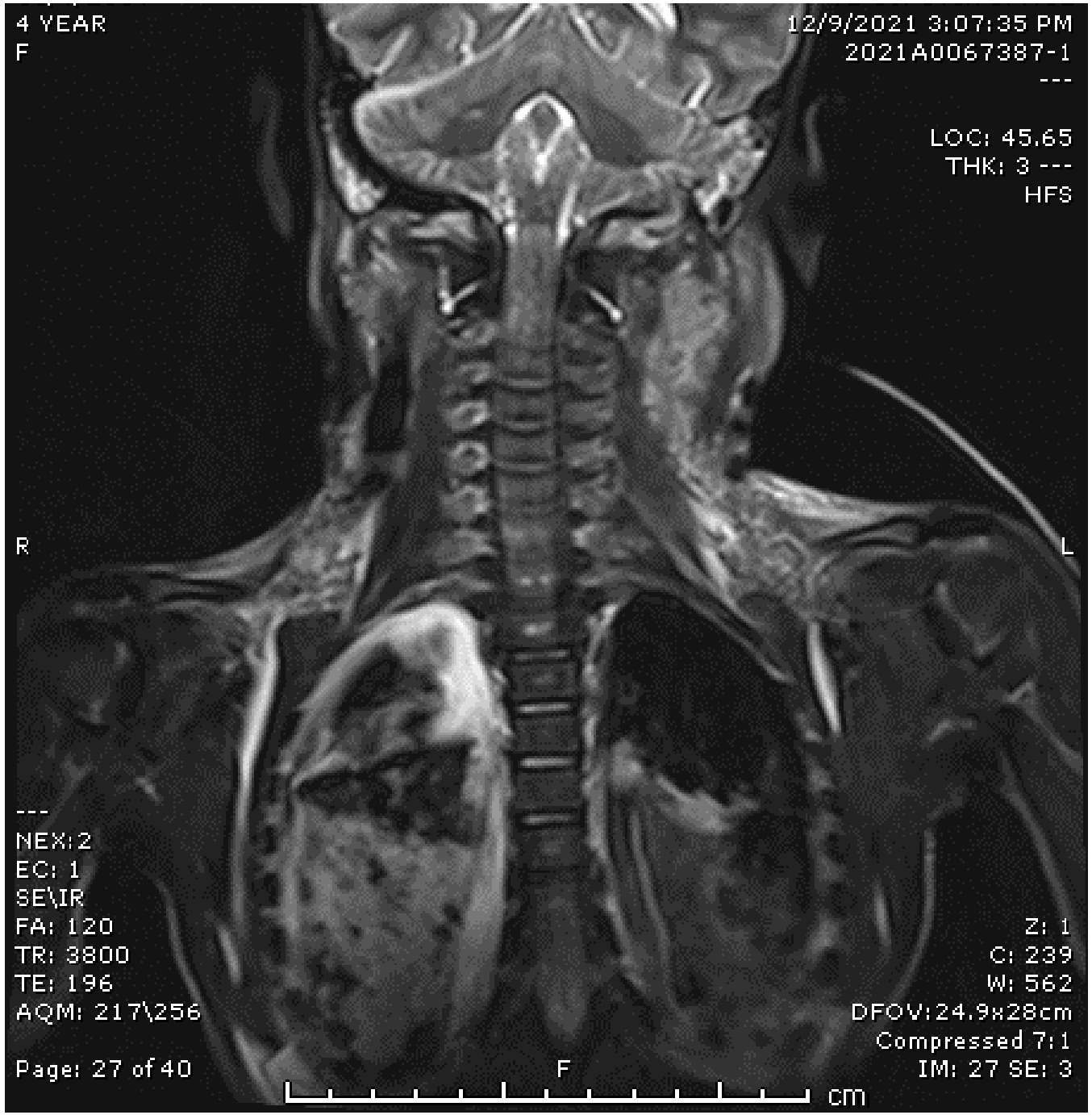


Treatment

- Oxygen by nasal prongs
- Prone position
- Antibiotics
- Dexamethasone
- Aspirin for DVT prevention

- 4-year-old girl with left sided neck swelling, then inability to move right arm and leg

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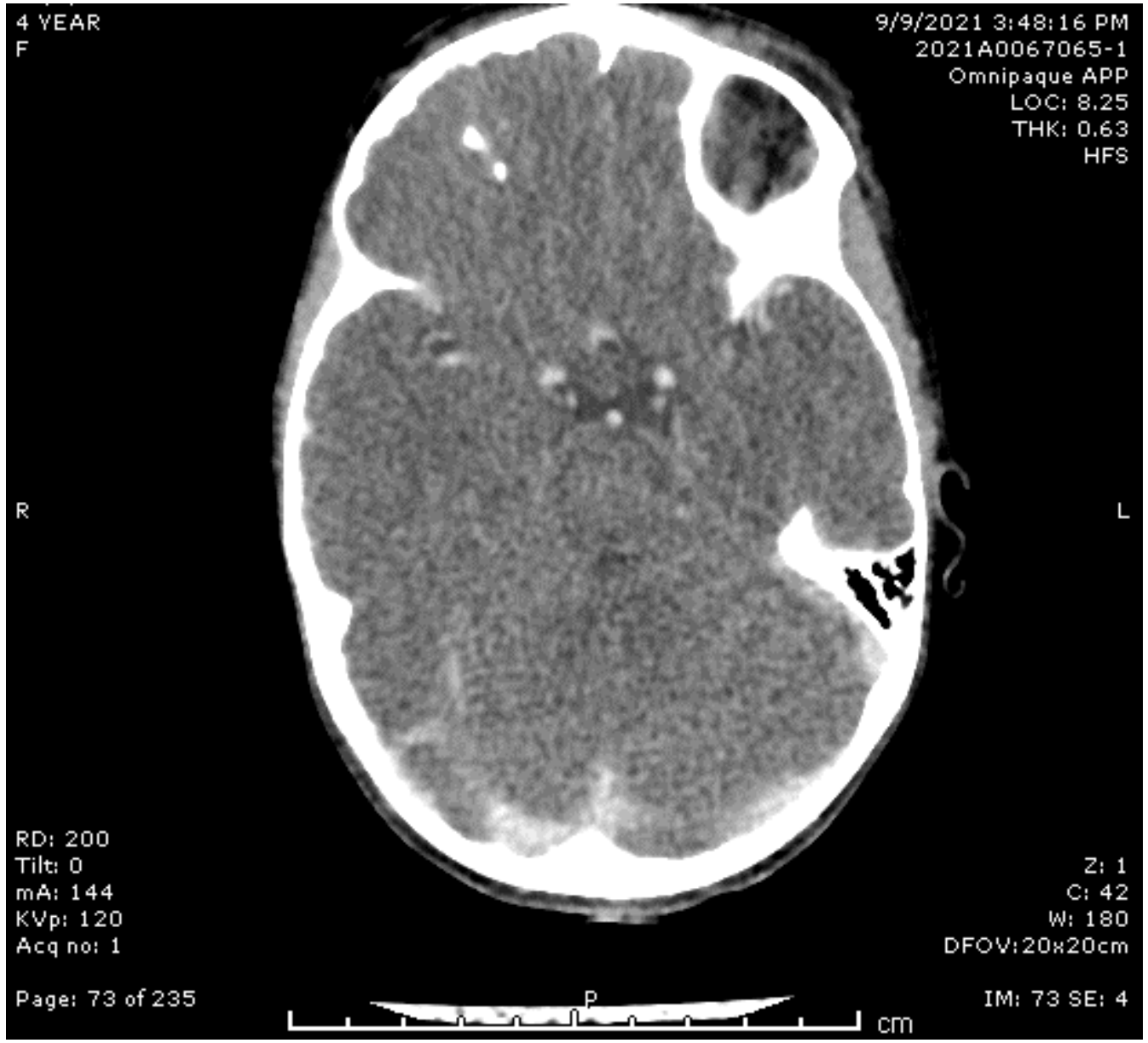
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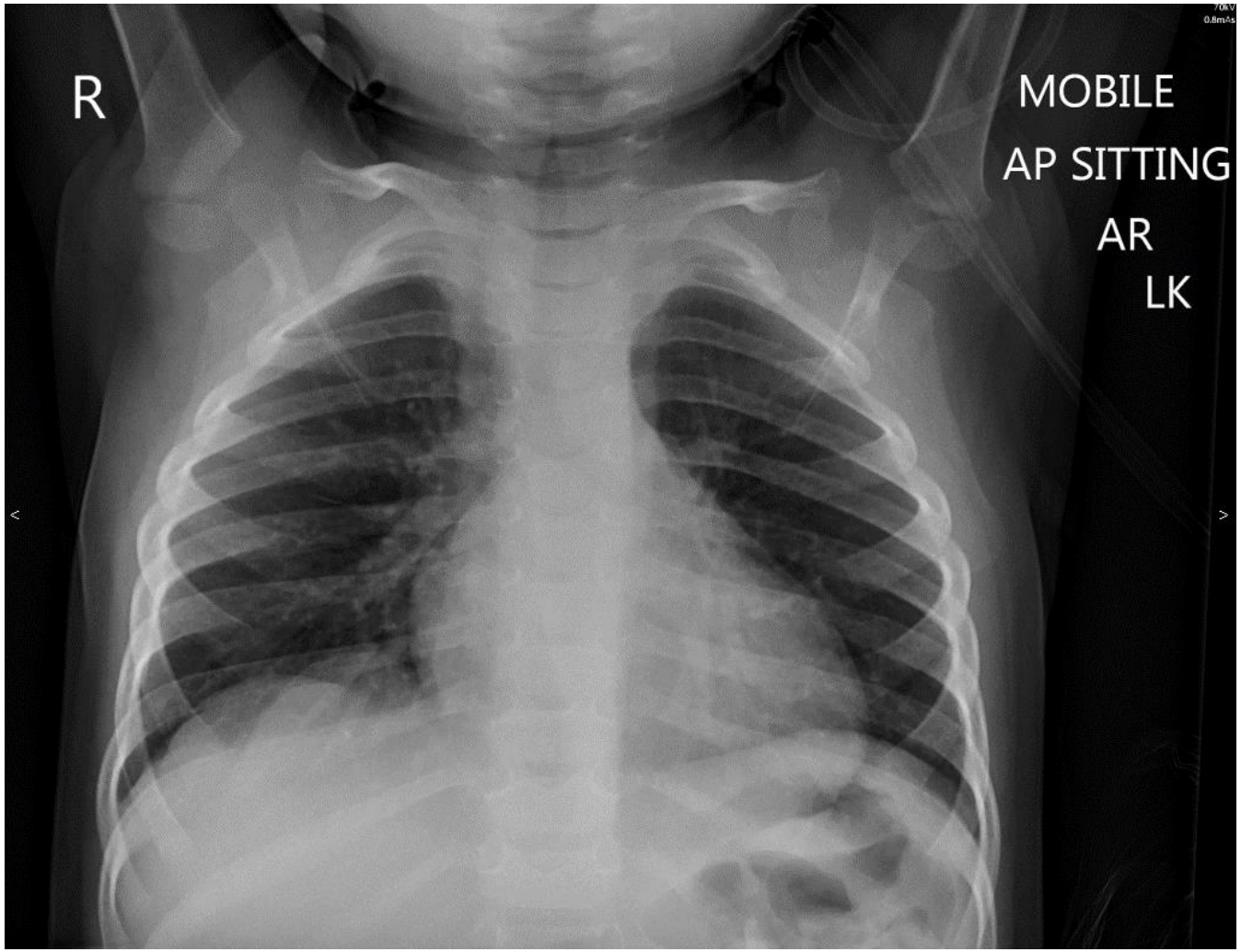
DFOV:20x20cm
Page: 73 of 235
P
cm
IM: 73 SE: 4

- Needle aspirate of left neck swelling
  - Streptococcus anginosis
  - Staphylococcus aureus
- Diagnosis: neck abscess with meningitis, venous sinus thrombosis, carotid artery narrowing with inflammation (vasculitis)
- What does this have to do with COVID?
  - COVID PCR negative
  - COVID antibody positive
- Hypercoagulable state related to COVID
- Antibiotics (flucloxacillin and ceftriaxone)
- Aspirin for strokes

- 3-year-old boy
- 3 days of respiratory distress, barking cough, inspiratory stridor
- COVID positive
- = COVID croup + bronchiolitis



Treatment

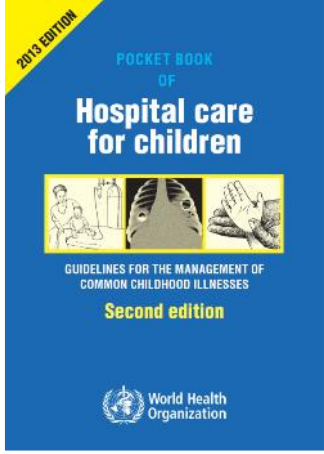
- Dexamethasone
- Adrenaline x 1 dose nebulized (0.2ml per kg of 1:1000 adrenaline, dilute to 6ml)

- 2-year-old boy
- COVID positive on PCR
- Severe respiratory distress
- What is on the x-ray?

Treatment

- Inhaled foreign body – surgeons removed food particles at bronchoscopy
- In this case COVID was a bystander

Stages of management of any sick child also applies to COVID



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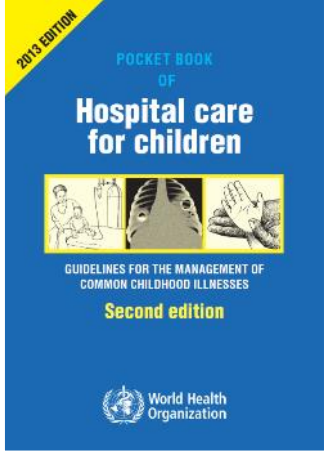
Triage



- Check oxygen saturation, triage emergency signs and examine for signs of respiratory distress. Follow Hospital Care for Children.
- **Admit to hospitalise a suspected case if the child is hypoxic, or has any other signs of severe pneumonia or any danger signs (inability to feed, severe respiratory distress, obstructed breathing, cyanosis, shock)**
- Give oxygen therapy, other standard therapies for pneumonia (standard antibiotics for moderate or severe pneumonia).

Triage (and ward rounds)
Assess the circulation

Healthy circulation

- Warm hands and feet
- Easily palpable radial pulse, dorsalis pedis and posterior tibial
- Normal BP with good pulse pressure
- Urine output (>1ml/kg/hour)

Shock

- Cold hands and feet
- Low volume pulses
- Prolonged capillary refill
- Hypotension, narrow pulse pressure
- Oliguria (<0.5ml/kg/hour)
- Other: mottled skin, lethargic, acidosis

Know blood pressure changes for age, and pulse pressure

Age	Systolic blood pressure	Diastolic blood pressure	Pulse pressure
Birth and neonate	60-85	45-55	25-35
Infant (1-12 mo)	80-100	55-65	35-45
Pre-school (1-5 y)	95-107	60-71	35-45
School-age (6-9 y)	95-110	60-73	35-50
Preadolescent (10-11 y)	100-119	65-76	35-50
Adolescent (12-15 y)	110-124	70-79	40-50

Overall

- Don’t over-treat or over-intensify
- Management of COVID patients is like other patients
  - Airway
  - Breathing
  - Circulation
  - The Stages of Management of any sick child
    - Discharge planning – are they being discharged to a safe place
    - Follow-up – for the long-term consequences of COVID