



Pandemic Influenza A (H1N1) in Critically Ill Patients

Clinician Outreach and Communication Activity (COCA) Conference Call

November 4, 2009

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Case Presentation

24 y/o healthy female developed fever, cough and myalgias days after caring for her mother ill with an ILI the week before.

After 5 days, fever increased to 103.7 with rigors and diarrhea. Seen and released from an urgent care center. No CXR.

After 6 days, admitted to community hospital with fever, dyspnea, and diarrhea. Hypoxic on 2L NC. RIDT neg for Influenza. CTPA neg for PE but showed diffuse opacities

Case Presentation

Rapid development of hypoxemic respiratory failure over 18 hours -> intubated. Right SC line -> PTX -> chest tube with re-expansion.

sP02 88% on $F_{I}O_2$ 1.0 and 10 PEEP

Medflight to Medical Center in illness day 7

ICU Arrival

Intubated, sedated, triggering vent

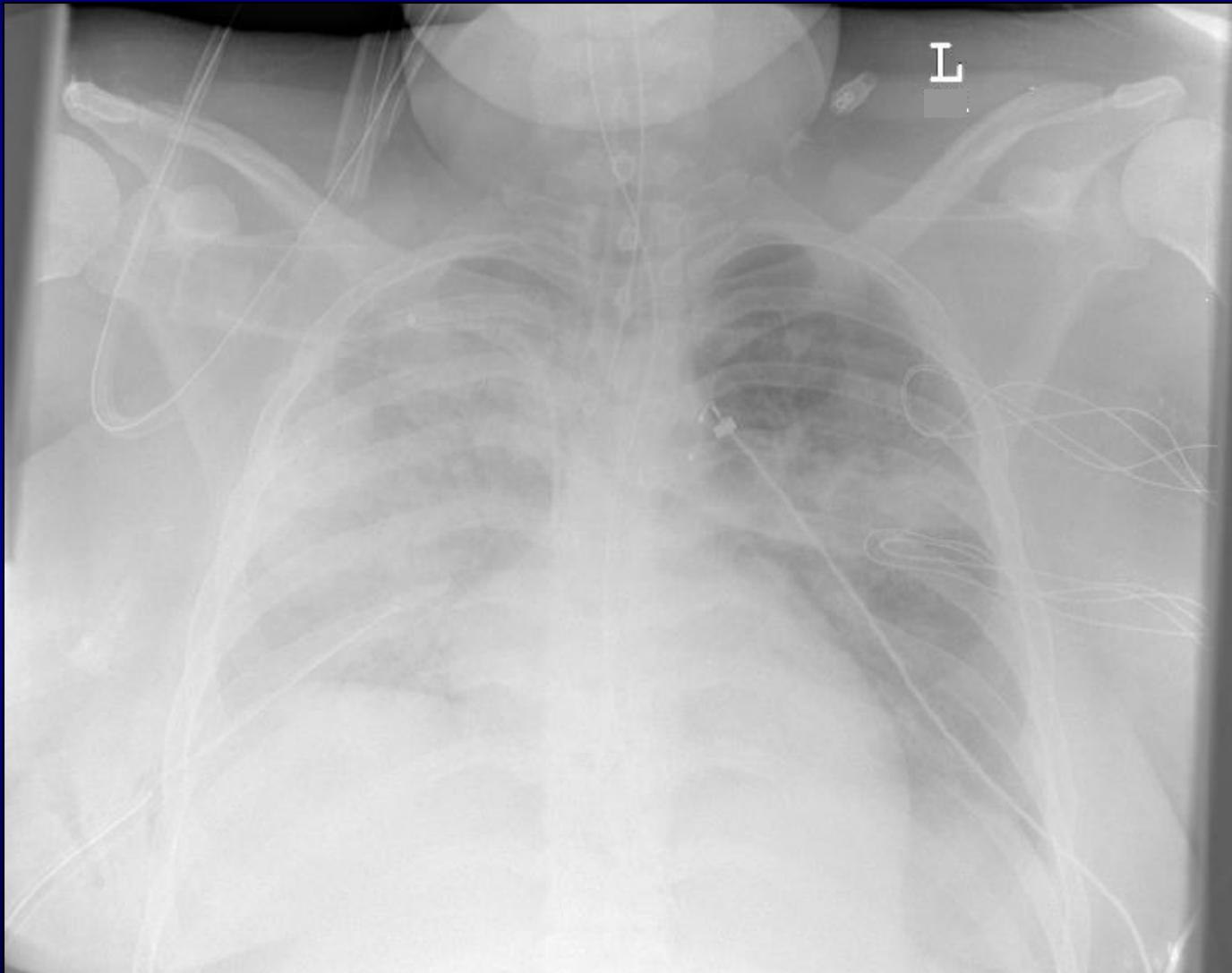
T 102 HR 102 BP 139/71 CVP 20 SpO₂ 79% (F_iO₂ 1.0)

- Bronchial BS right base with functioning chest tube
- Warm extremities

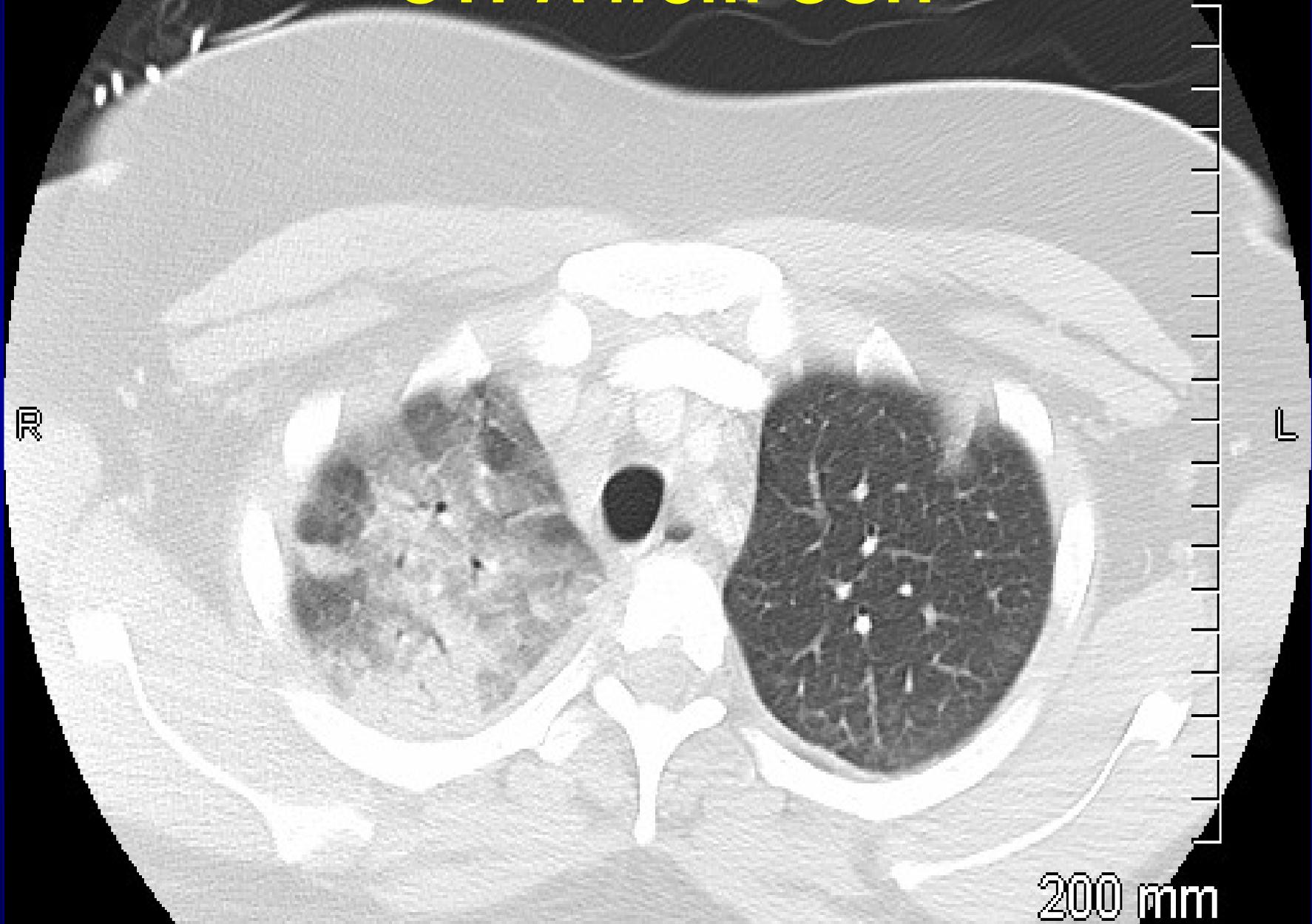
Labs

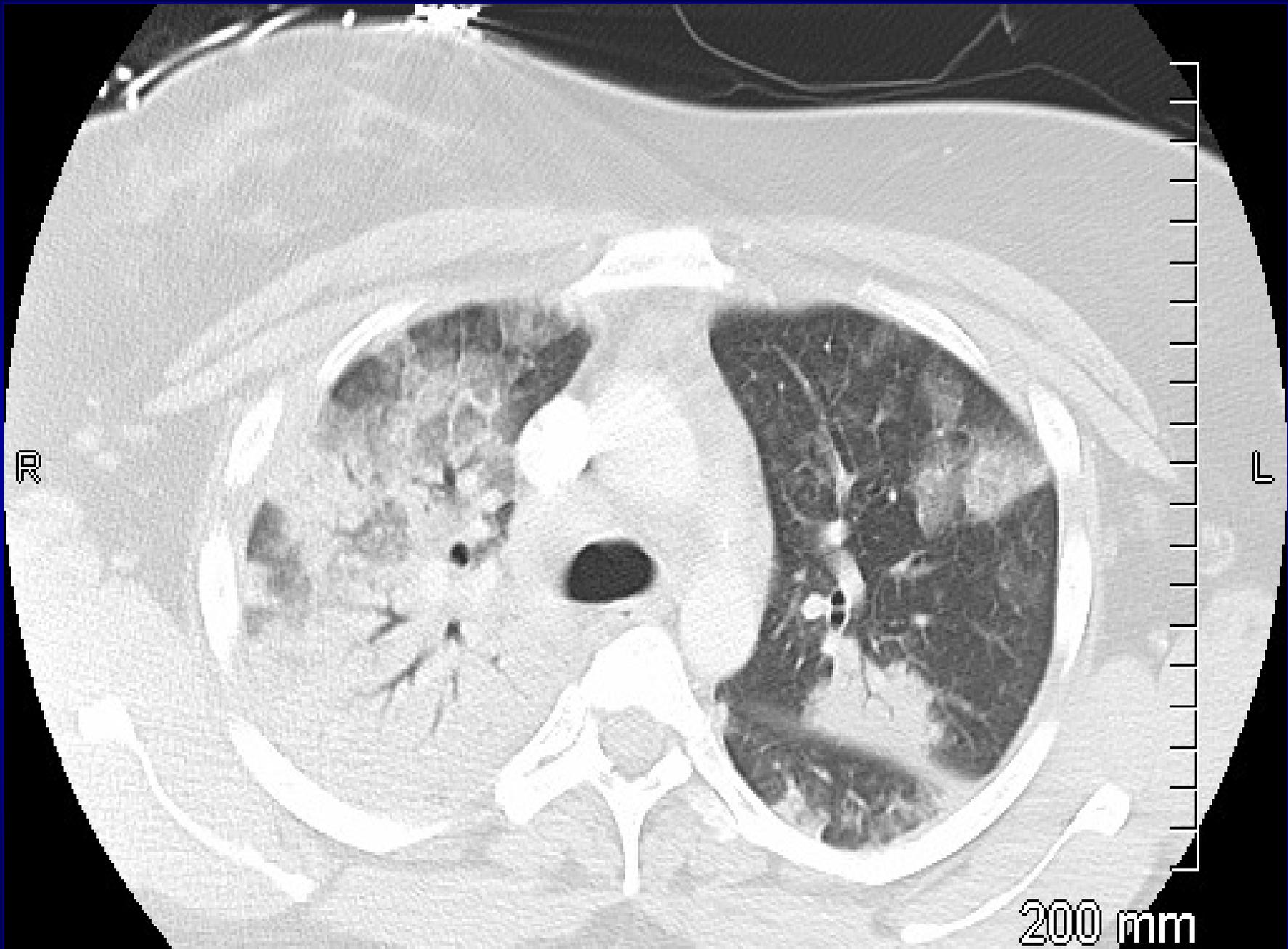
- WBC 4,100 81P 16L (AL 0.6; normal 1.0-4.8)
- SGOT 43 (32)

Admission CXR



CTPA from OSH

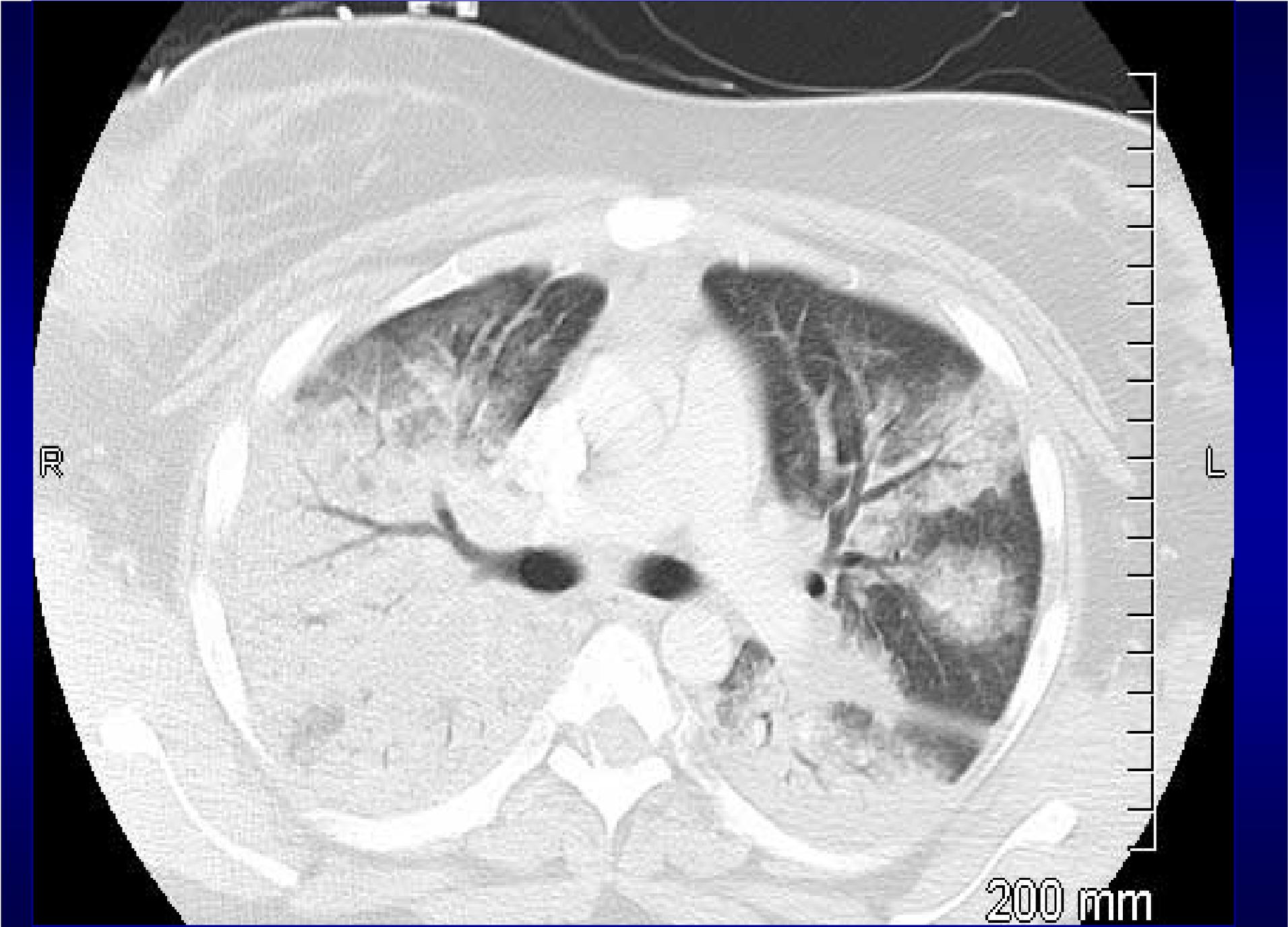




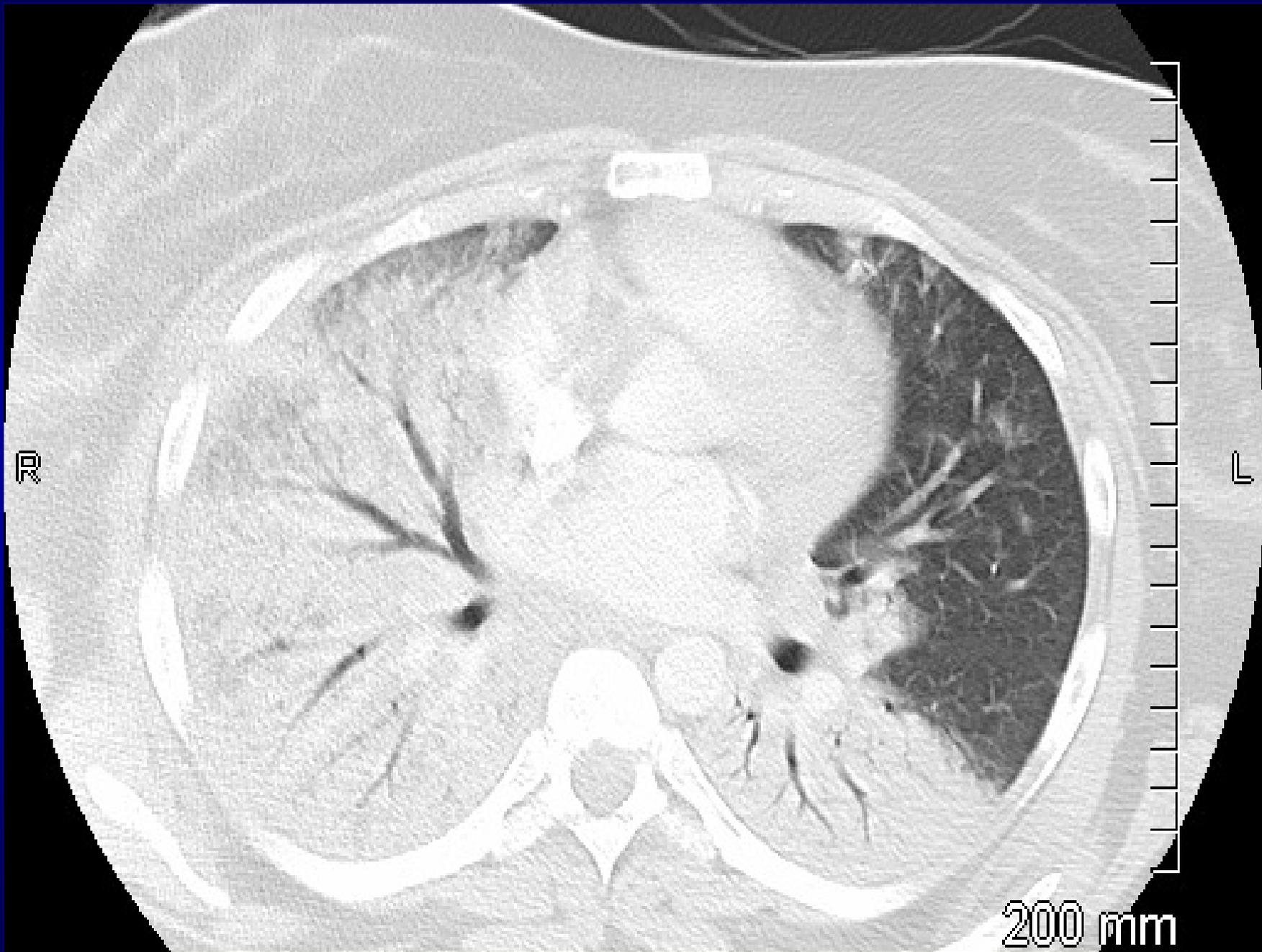
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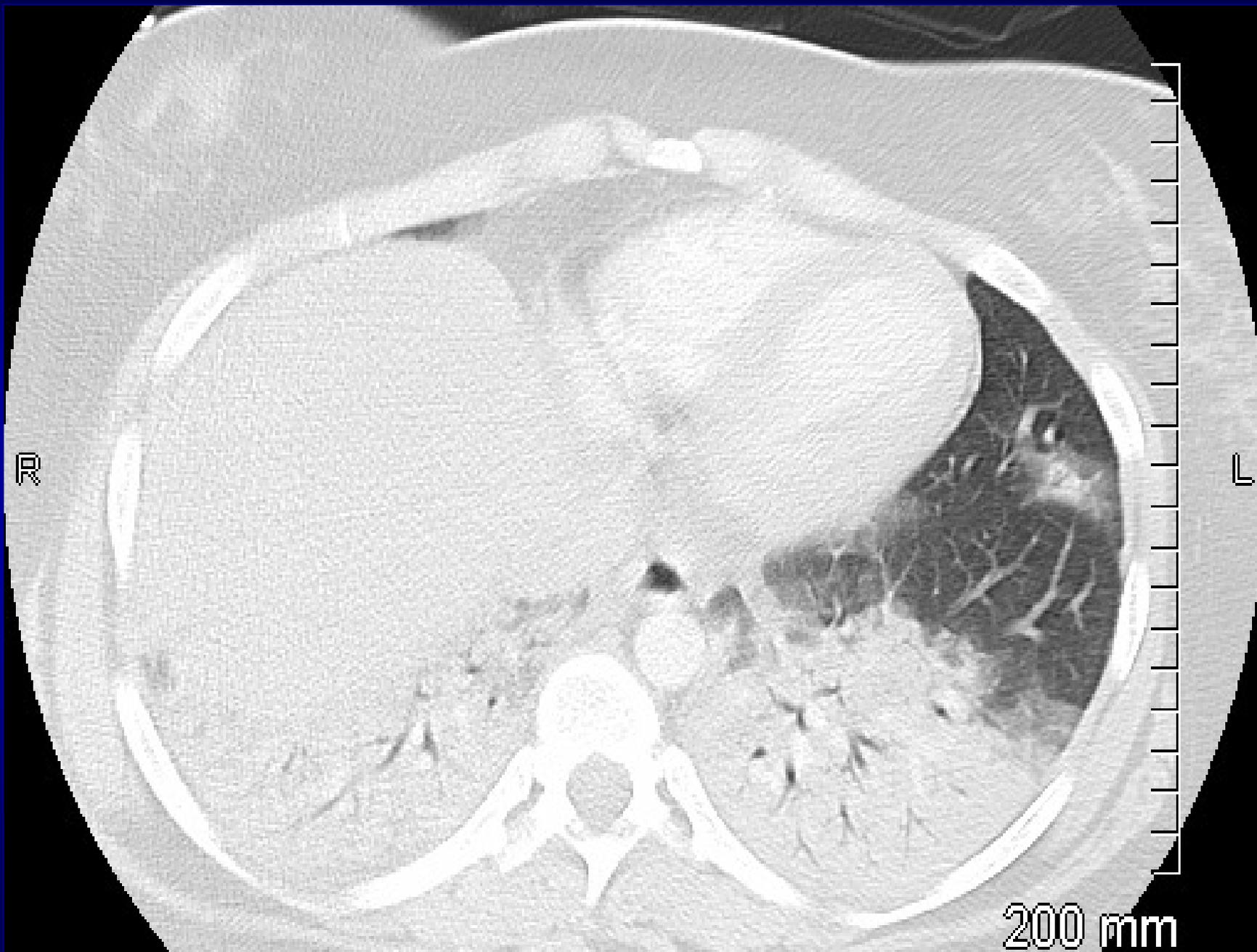
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Initial ICU Course and Rx

Vent Management

- Best PEEP by “tidal compliance” = 20 cmH₂O
- 5 cm PEEP increments Q 2-5 minutes at constant Vt
 - Vt 300, PEEP 10, Pplat 25, (Δ 15), sPO₂ 79 (100%)
 - Vt 300, PEEP 20, Pplat 33, (Δ 13), sPO₂ 80 “
 - Vt 300, PEEP 25, Pplat 39, (Δ 14), sPO₂ 96 “
 - Vt 220, PEEP 20, Pplat 30, (Δ 10), sPO₂ 96 (60%)
- Vt 220 (4 ml/kg PBW) x 35/min = PaCO₂76, pH 7.16

Cisatracurium for 48 hours

Initial ICU Course and Rx

BAL

- Pink lavagate
- WBC 1,433 (45 L, 13 PMN, 19 Mono, 23 AM)
- No growth

Oseltamivir 150 BID, Vancomycin, Cefipime,
Levofloxacin

Conservative Fluid Rx (Diuresis, no maintenance
fluids)

ICU and Hospital Course

Day 4

- rtPCR + novel A(H1N1) in nasal (OSH) and BAL
- Oseltamivir and Leviofloxacin continued

Day 5

- Extubated, taking PO

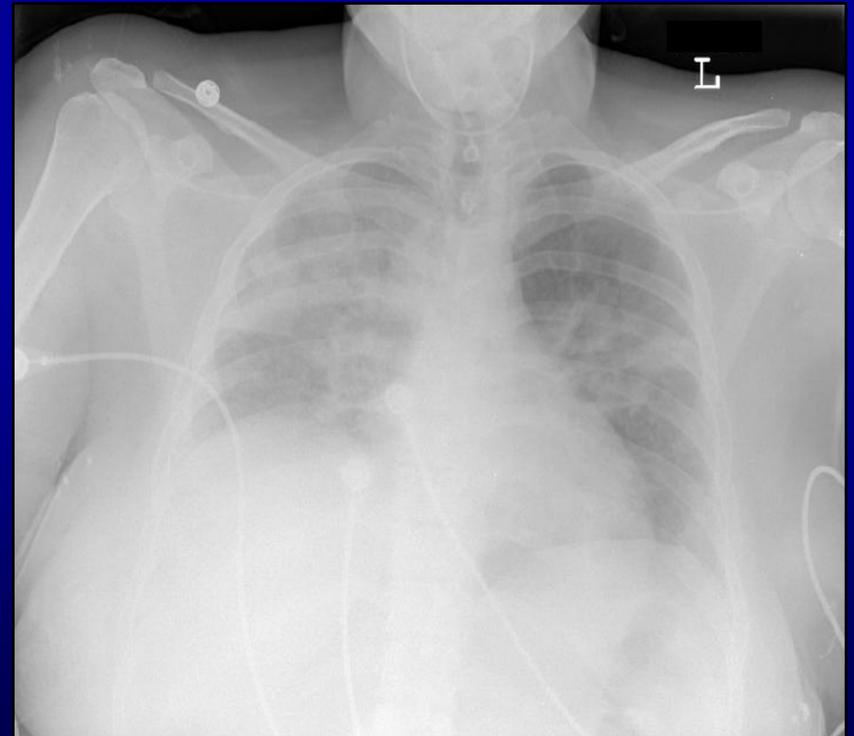


Day 6

- Transferred to Medical Floor

Day 8

- Oseltamivir DC'd, SpO₂ 96 (RA)
- Discharged home



Initial Presentation – Outside hospital: Day 0



- 38 year old Latina female, G8P7 now 34 4/7 weeks pregnant
- 7 day history of myalgias, non-productive cough, dyspnea, and low grade fever
- 3 day history of emesis, 1 day of diarrhea
- PMH/PSH: negative
- SH: 3 sick children at home, immigrated to US 10 years ago

Outside hospital: Day 0

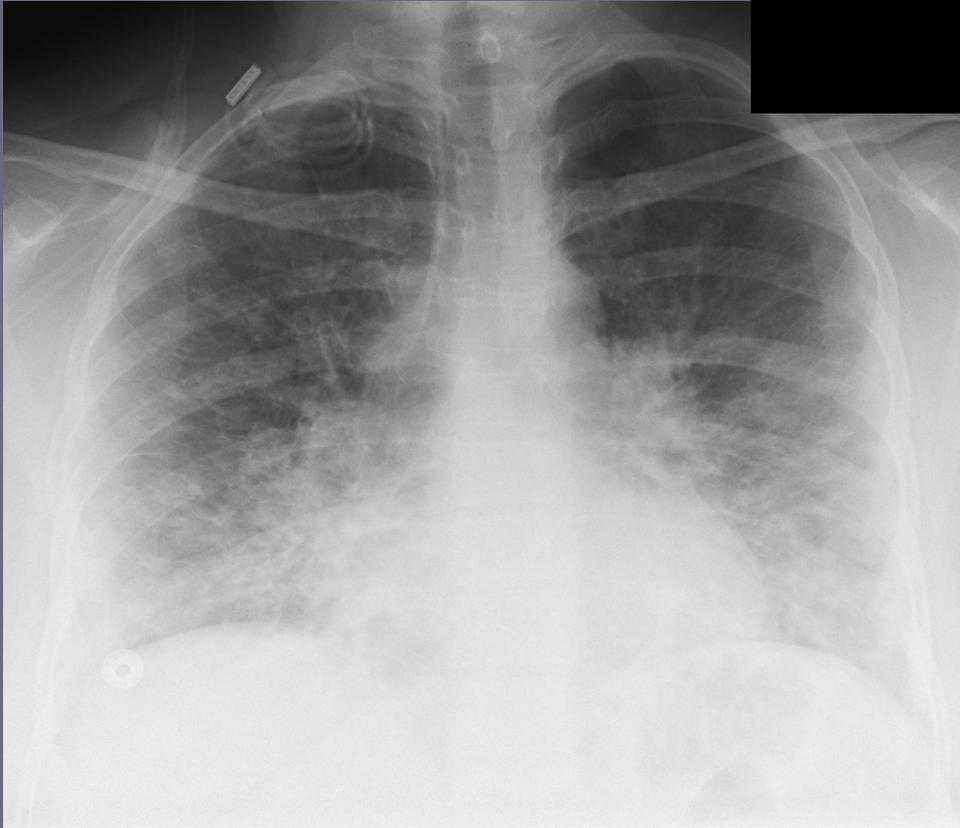


- PE: T 100.9, BP 116/63, HR 98, RR 28, bibasilar crackles, mild RUQ pain, otherwise negative
- WBC 4.3 with 56 segs and 16 bands, platelets 215
- AST 356, ALT 192, T bili 0.6, Alk Phos 176, hepatitis panel negative
- Rapid screen for influenza A – positive
- CXR: bilateral interstitial infiltrates
- Started on Oseltamivir 75 mg BID, Azithromycin 500 mg po daily & Ceftriaxone 2g IV daily
- Arrangements made for transfer to our institution

Clinical Course: Day 1



- PE: T 100.4, BP 118/76, HR 110, RR 20, 94% RA
- Increased work of breathing, bilateral crackles
- Continued Oseltamivir, Azithromycin, and Ceftriaxone
- Started Amantadine 100 mg po BID
- WBC 5.8 with 46 segs, 42 bands
- AST 598, ALT 305, T bili 0.1, Alk Phos 235

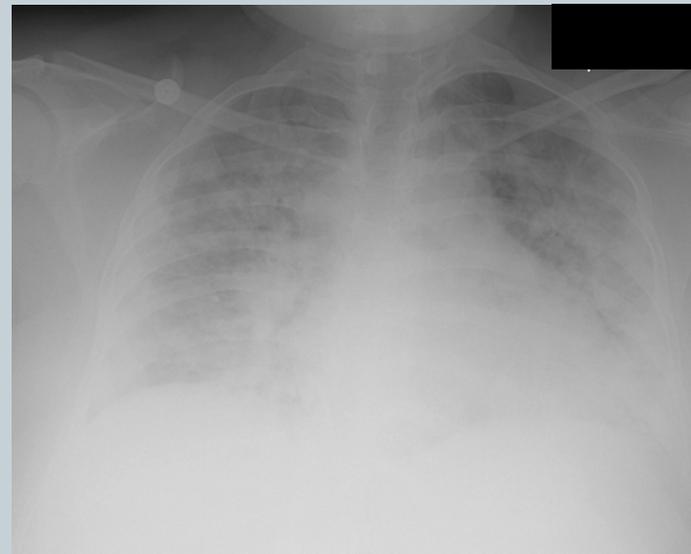


- Changed antibiotics to Vancomycin 1g IV q 8 hrs and Zosyn 3.375g IV q 6 hrs

Clinical Course: Day 2-3



- PE: T 98.5, BP 103/77, HR 90-129, RR 26, 96% 3L NC
- Crackles throughout
- WBC 6.2
- AST 640, ALT 335, T bili 0.4, Alk Phos 223 peaked
- INR 0.9, Fibrinogen 500
- Cardiac Echo: EF 65%



Clinical Course: Day 4

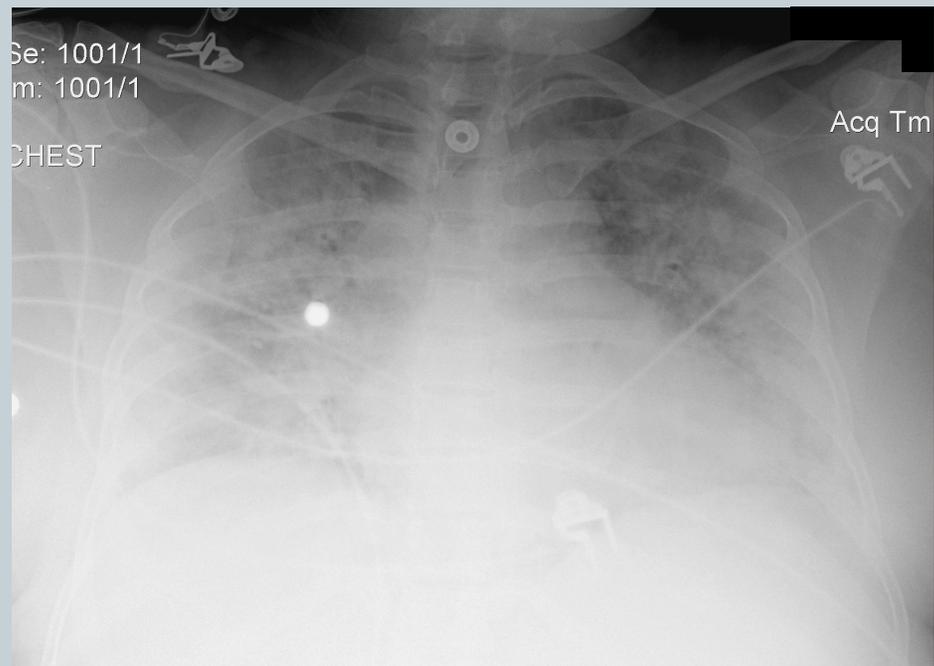


- PE: T 98.6, BP 145/92, HR 93, RR 22, 97% 5L NC
- Bilateral crackles and expiratory wheezes
- WBC 5.6, bands decreased to 29
- Increased work of breathing, RR 40's
- Increased oxygen supplementation -> placed on CPAP mask briefly
- Bilateral rales / rhonchi
- Transferred to SICU

Clinical Course: Day 4



- Intubated for respiratory distress
- Initial vent settings: PC/AC f18 PIP 25 PEEP 10 I:E 1:1.4 (tidal vol: 380-430, ~6mL/kg)



Clinical Course: Day 5



- Required heavy sedation and paralysis for effective oxygenation and ventilation
- FiO₂ increased, PIP increased to 28, PEEP to 12
- Zanamivir 600mg IV q 12 hours started and Oseltamivir stopped
- OB began induction of labor with plans for forceps vaginal delivery

Clinical Course: Day 6



- Respiratory status continued to decline
- Trial of 6 hours with no progression in labor parameters
- C-section performed, APGARS: 5 & 9
- ABG: 7.38 / 34 / 342 / 20 / -4.2 / 98.3%
- P/F: 340
- Able to wean ventilator settings, discontinue paralysis

Clinical Course: Day 9 (48 hrs postop)



- ABG: 7.42 / 42 / 120 / 26 / 2.1 / 96.4%
- RSBI: 76, Extubated
- Completed 5 day course of Zanamivir
- Weaned to room air
- Transferred to floor
- Over next 2 days, recovered & was discharged on Day 12 from time of diagnosis



Learning Points



- Relatively slow progression of disease
- Liver enzyme elevation – viral induced?
- Failure of Oseltamivir versus superimposed pneumonia
- Marked improvement in respiratory status after delivery
- Vaginal delivery versus C-section: Which is best?