Case presentation: COVID-19 in pregnancy

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Case:

- 33 year old female, G3 P1011 at 21 weeks 6 days with twin pregnancy
  - PMH: Asthma, Obesity (early pregnancy BMI 36)
  - POBHx: Term delivery, SVD; one early miscarriage
  - PSH: oral surgery
  - Meds: PNV, albuterol prn
  - Allergies: NKDA

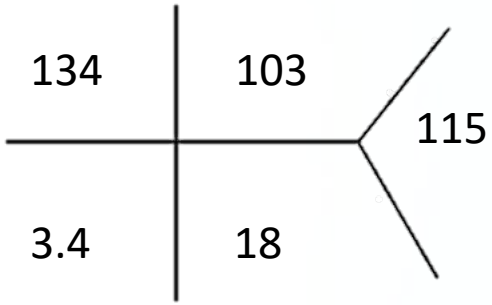
Case:

- Day 0: Reports COVID-19 exposure at work, asymptomatic
- Day 4: COVID-19 PCR negative
- Day 5: Symptoms - chills, cough, fatigue, rhinitis. Temp 99.0.
- Day 6: Called in, instructed to retest.
- Day 7: COVID-19 test positive.
- Day 8-10: Fever up to 105, sore throat, productive and worsening cough
  - Daily nursing calls, declined admission
- Day 11: Home O2 sats 90-92% --> Instructed to come in for evaluation

Case:

Admission (23 weeks):

- Vital signs: Tmax 38.6 (37.6-38.6) HR 118-125
  RR 24-26 BP 107-125/52-55
- Fetal tachycardia 170 bpm/180 bpm
- O2 sat 97% on RA
- Labs:



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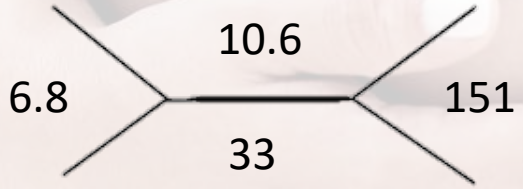
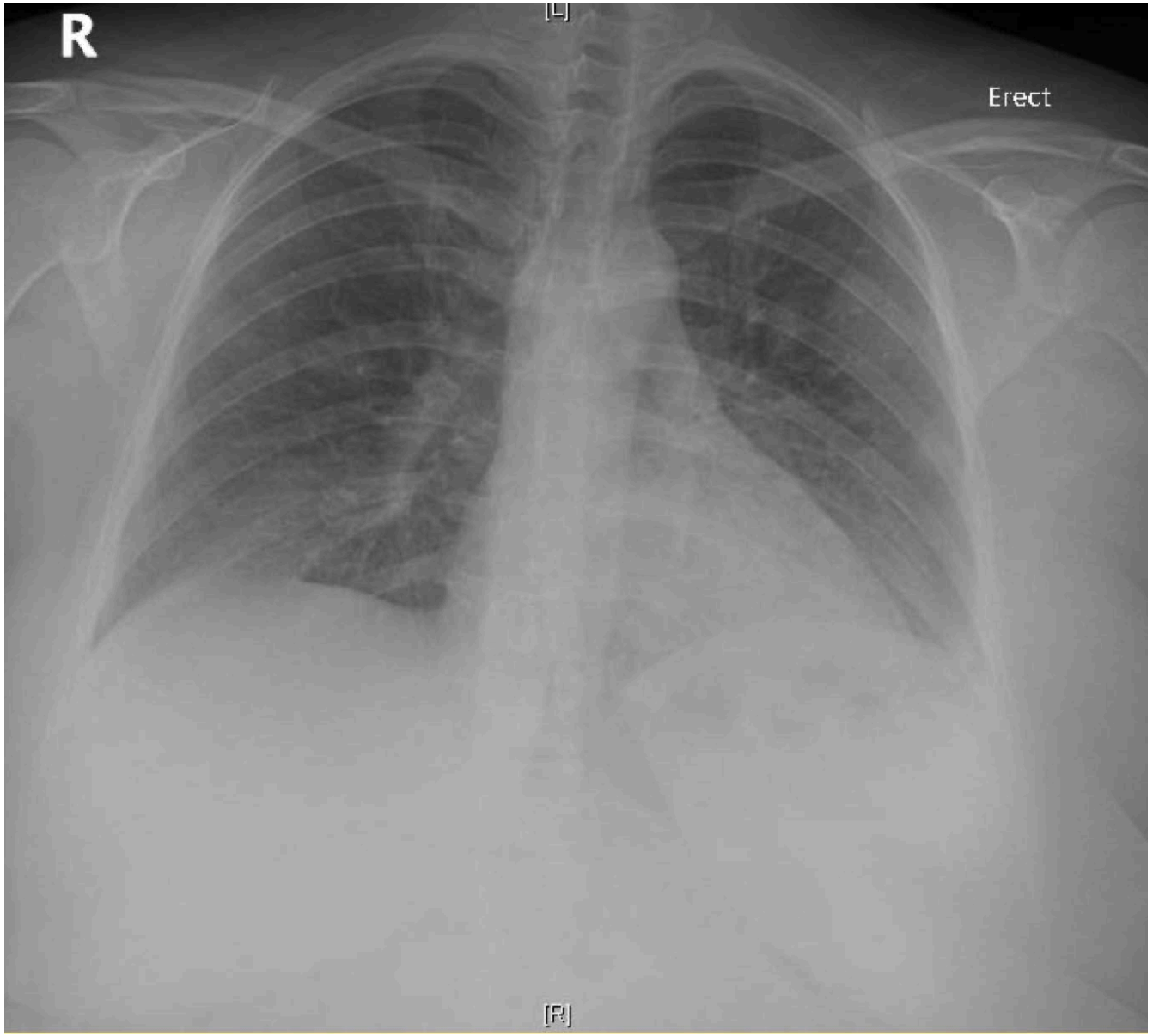


Case:

CXR 1/19/21:

Lungs: No focal opacities. Pleural spaces: No pleural effusions. No pneumothorax.



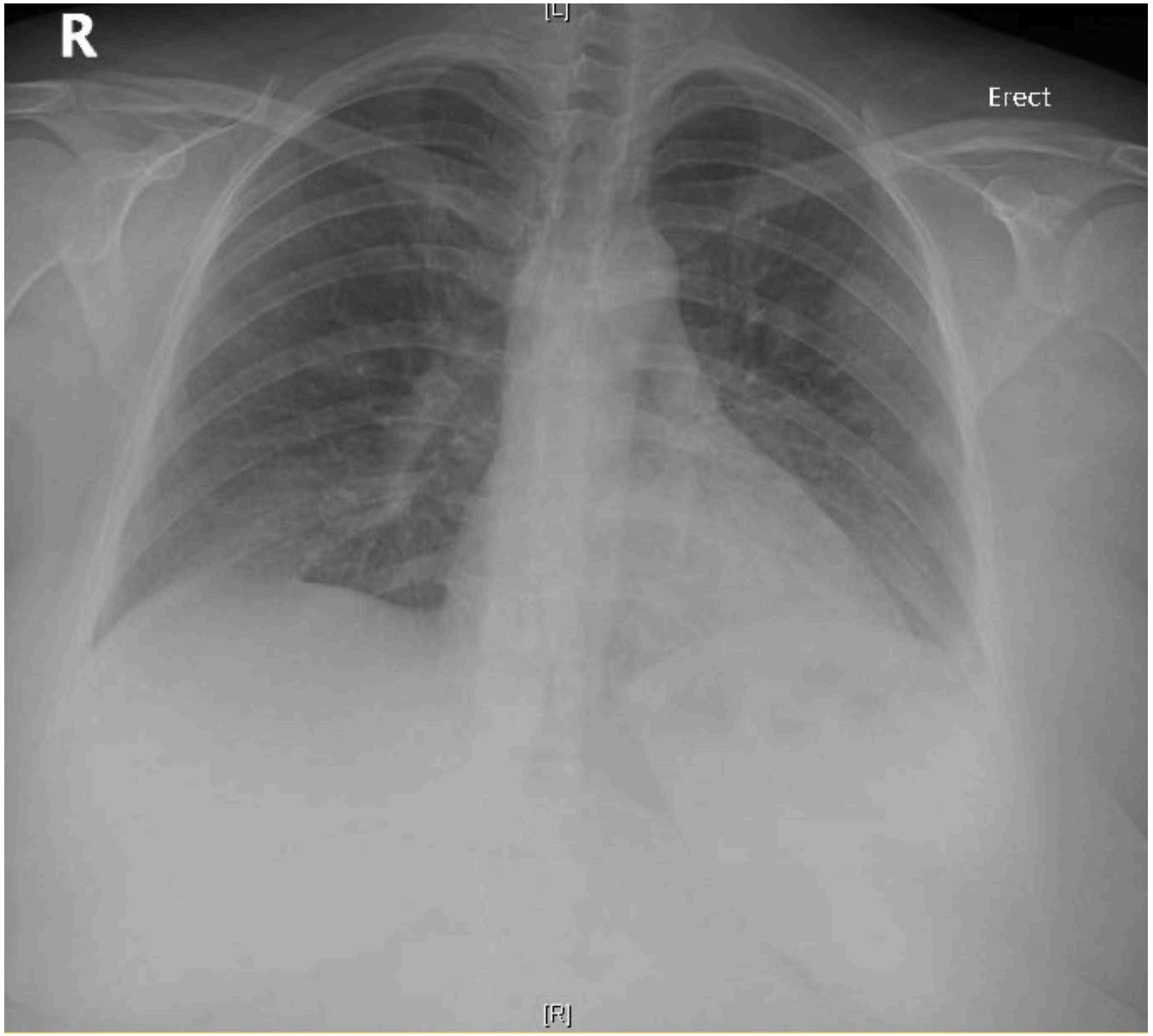
Case:

- Plan: Supportive treatment, remdesivir, dexamethasone, heparin sq (ppx)
- Overnight: Increased O2 requirements
  - Desat to 88% -> NC from 3 to 6 to 10 L, started on oximizer
  - Acute desat to 60-70%, recovery to 90's.
  - Transfer to MICU
- Course in the ICU:
  - Mild hypotension, treated with IVF
  - Oximizer versus NC to maintain O2sats >95% (desat with ambulation)
  - Monitoring of I's and O's, Lasix treatment
  - Per patient preference, daily fetal doptone check

Case:

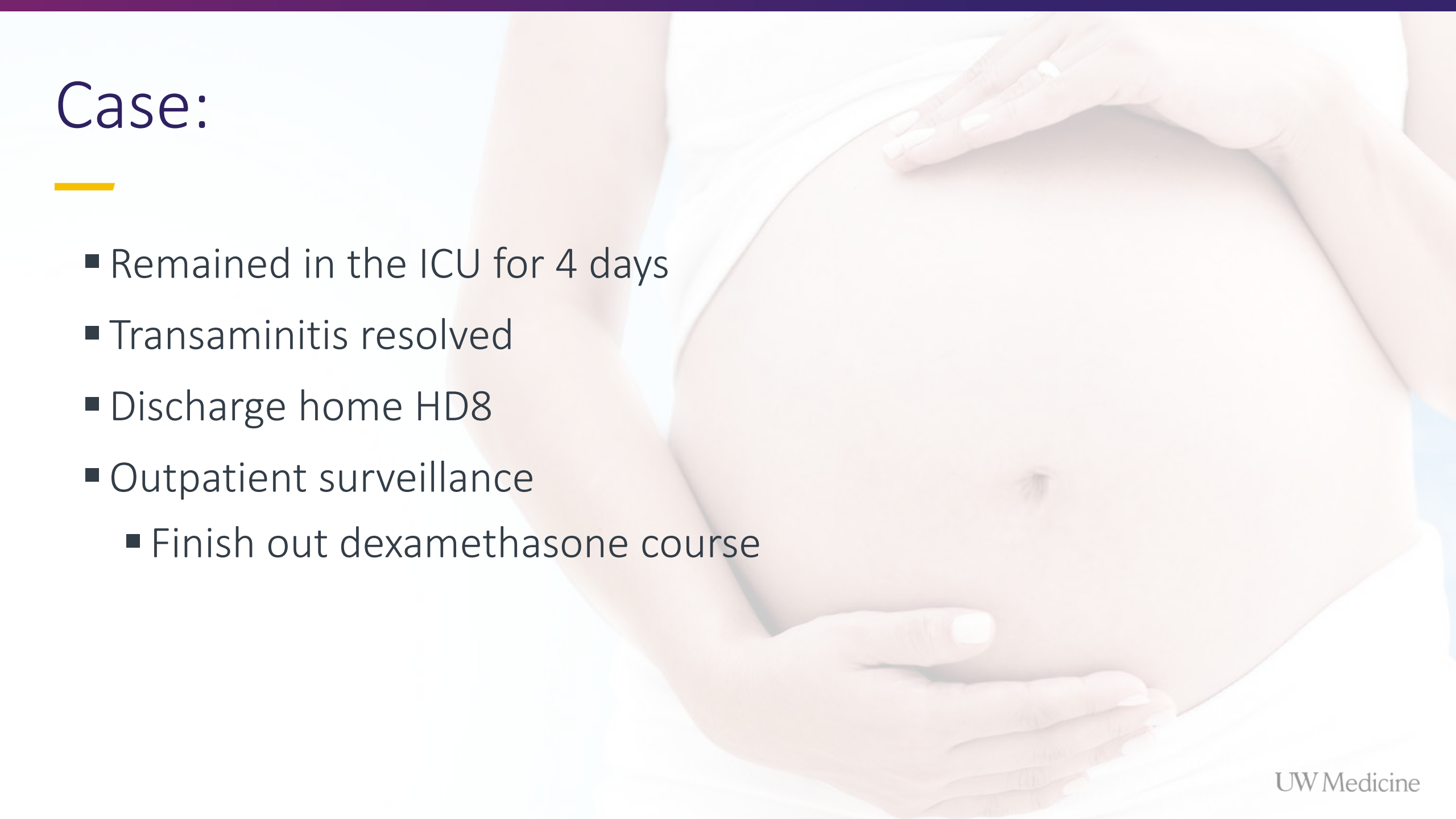
CXR 1/20/21:

Lungs: Low lung volumes. Diffuse lung disease with patchy bilateral consolidation has worsened, likely pneumonia



Case:

- Remained in the ICU for 4 days
- Transaminitis resolved
- Discharge home HD8
- Outpatient surveillance
  - Finish out dexamethasone course



IMPORTANT CONSIDERATIONS

Pregnancy:
- Maternal
- Fetal
- Neonatal

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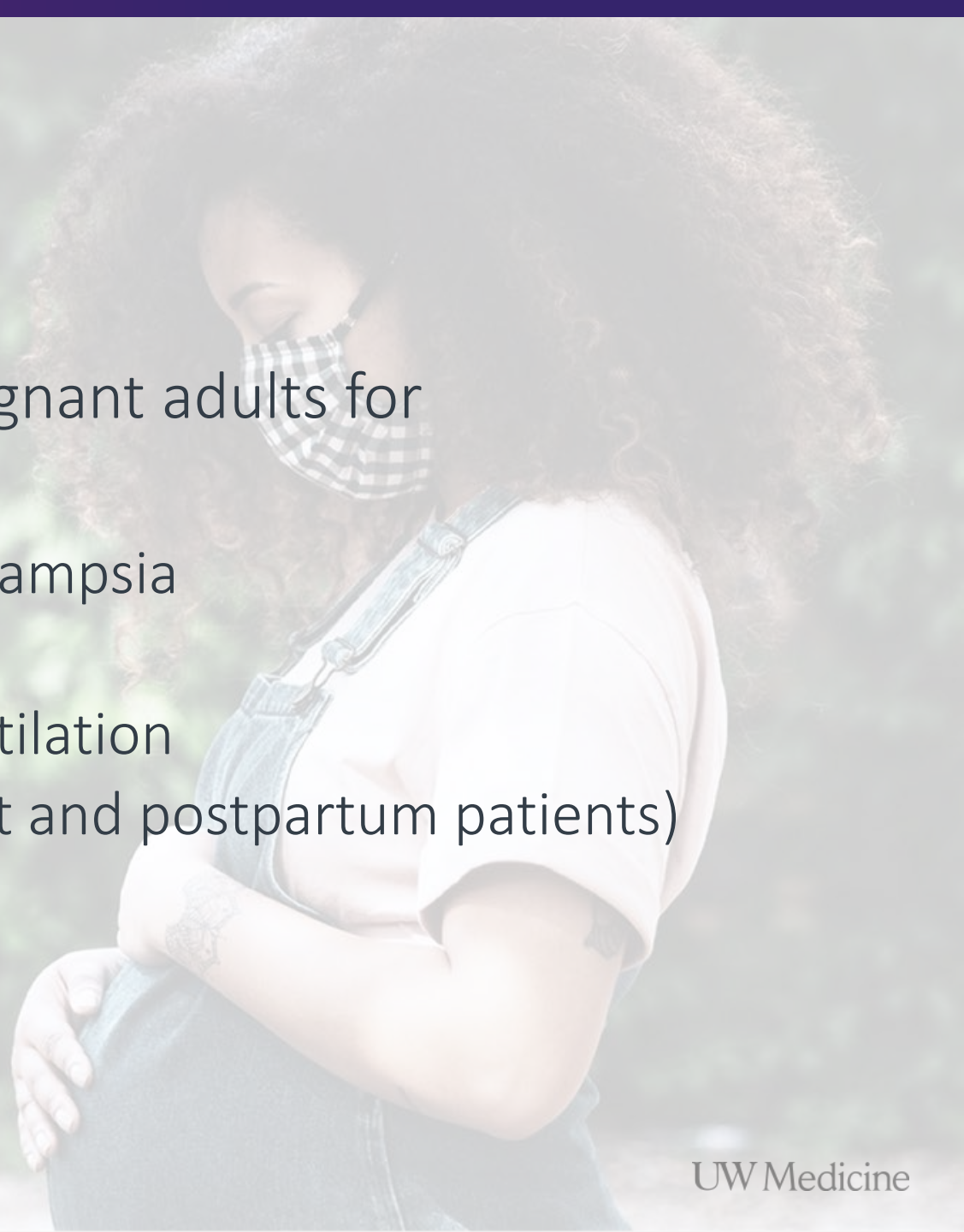
Maternal considerations-

- Outpatient management if possible
  - Close monitoring
  - Telemedicine if possible
- Inpatient management:
  - Comorbid conditions
  - High fever
  - SOB, tachypnea
  - < 95% oxygen saturation on room air, supplemental oxygen requirement
  - Other symptoms indicating severe disease
  - Obstetric / fetal concerns

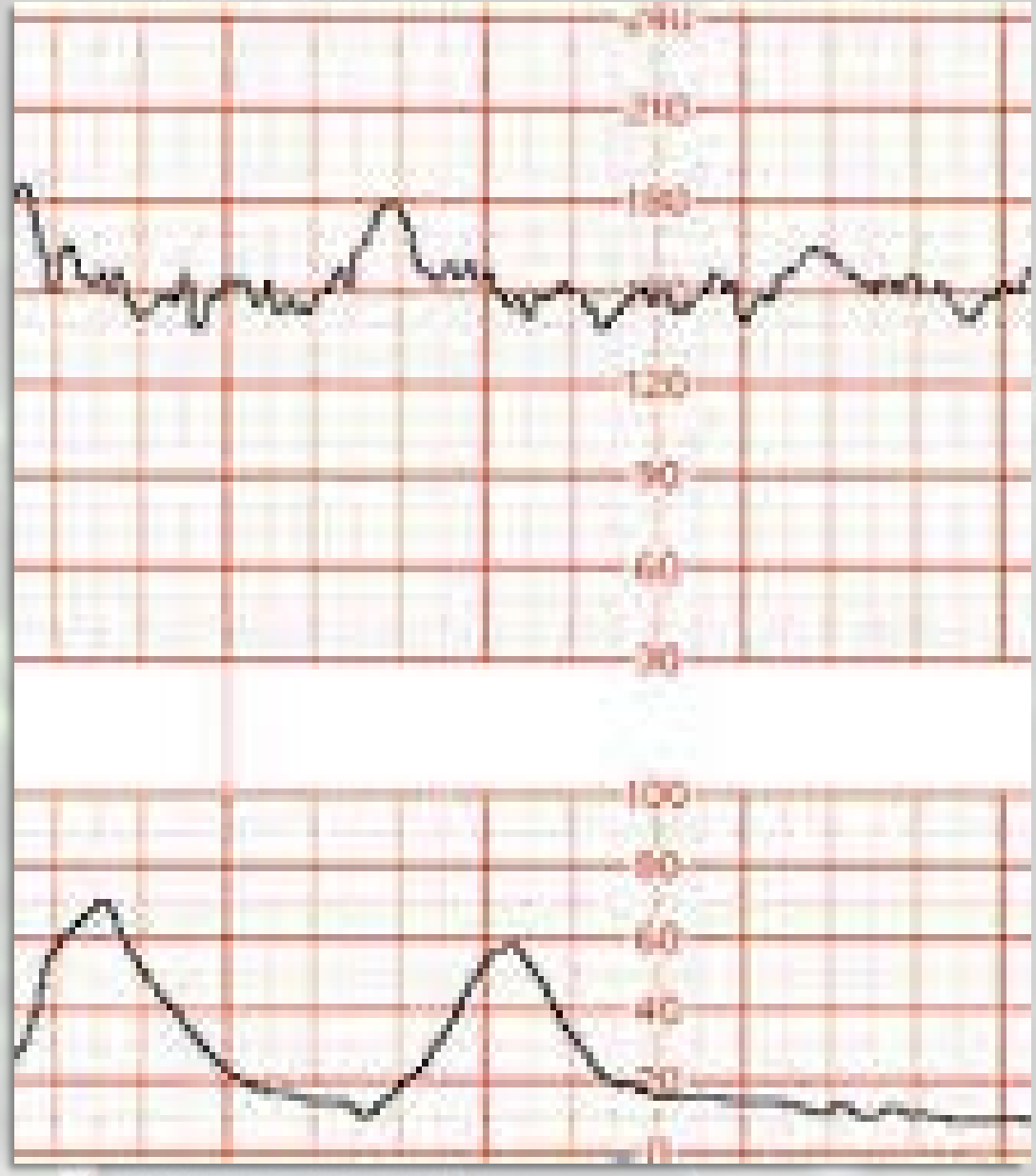
Maternal considerations-

- Inpatient: Similar protocols as non-pregnant adults for
  - Clinical care – judicious use of IV fluids
  - Lab abnormalities: COVID-19 vs pre-eclampsia
  - ICU admission
  - Evaluation for need for mechanical ventilation
  - Prone positioning (feasible for pregnant and postpartum patients)



Fetal considerations-

- Fetal monitoring should be performed when fetal intervention including delivery would be considered based on
  - Gestational age
  - Maternal status
  - Maternal preferences
- Is a higher level of care needed?
- Antenatal corticosteroids
- Magnesium infusion
- Maternal positioning
- How fast is fast?



Neonatal considerations

- Establish guardianship when possible
- Alert pediatric / NICU team as soon as possible.
- Neonates are currently no longer routinely separated from their mothers.
- Breastfeeding / breastmilk is considered safe and should be encouraged.

IMPORTANT CONSIDERATIONS

Medications

Generally, most are considered safe in pregnancy

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IMPORTANT CONSIDERATIONS

Delivery – multi-disciplinary planning

Delivery – multi-disciplinary

- Important: communication between ICU, OB, anesthesia and peds/NICU teams
- Delivery decision
  - Based on maternal status, concurrent pulmonary disease, critical illness, ability to wean off the ventilator, gestational age at the time of delivery, and shared decision making with patient or healthcare proxy.
  - Third trimester (>/= 28 weeks): large uterus can decrease expiratory reserve volume, inspiratory reserve volume and functional residual capacity (less of an effect in the second trimester)
  - Consider time to delivery
- Postpartum care: Beware of fluid shifts, hypervolemia.

SUMMARY

- Pregnant women are at risk for severe COVID-19 disease
- Robust outpatient follow up plan
- Clinical care is similar -both for general inpatient and ICU care
- Multidisciplinary planning and close communication is necessary for all teams.

QUESTIONS?

Antithrombotic medications

- Pregnancy is a hypercoagulable state
- Prophylactic heparin or low molecular weight heparin is recommended
- If therapeutic anticoagulation is needed, consider a heparin infusion.

-> Consider need for delivery or other interventions

-> Time for reversal

-> Time needed to wait for regional anesthesia

Kreuziger et al.
https://www.hematology.org/covid-19/covid-19-and-vte-anticoagulation
SMFM. July 2, 2020.

Remdesivir

- No known fetal toxicity
- Pregnant women are often not included in clinical trials.
- SMFM recommends that remdesivir be offered to pregnant women with COVID-19 meeting criteria for compassionate use.

Beigel et al. NEJM. May, 2020. SMFM. July 2, 2020.

Dexamethasone

- Dose 6 mg PO or IV daily for up to 10 days
- Crosses the placenta, used in many countries for antenatal corticosteroids

-> Use in patients on supplemental oxygen (or more)

-> Benefit of mortality reduction outweighs risk of exposure of fetus (SMFM recommendation)

Recovery Collaborative Group et al. NEJM, 2020.
SMFM. July 2, 2020.

Antibiotics

OK:

- Ceftriaxone (and other cephalosporins)
- Azithromycin
- Meropenem
- Piperacillin-tazobactam
- Linezolid
- Vancomycin

Avoid:

- Fluoroquinolones, tetracyclines

SMFM. July 2, 2020.

Magnesium sulfate

- Clinical indication:
  - Pre-eclampsia with severe features (severe range blood pressures, worsening renal or hepatic function, neurologic symptoms, pulmonary edema)
  - Eclampsia (seizures)
  - Risk for preterm delivery < 32 weeks for fetal neuroprotection
- COVID-19 <-> pre-eclampsia
- Assess renal function, adjust dose
- Unclear whether magnesium infusion increases risk for pulmonary edema with COVID-19 given limited data.

SMFM. July 2, 2020.