

Today's Agenda

Time (MT)	Presentation	Presenter(s)
Noon – 12:05 pm	Welcome, Announcements, Introductions	Lachelle Smith, Director, ECHO Idaho
12:05 – 12:10 pm	Idaho Epidemiology Curves and Public Health Updates	Carolyn Buxton Bridges, MD, FACP
12:10 – 12:15 pm	Treatment Updates	Cathy Oliphant, PharmD
12:15 – 12:55 pm	COVID-19 Cases from the Infectious Disease Perspective	Sky Blue, MD
12:55 – 1 pm	Closing Pearls, Announcements, Call to Action	Lachelle Smith, Director, ECHO Idaho

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Idaho Epidemiology Curves and Public Health Updates

Carolyn Buxton Bridges, MD, FACP

Governor's Coronavirus Working Group, Former CDC Public Health Physician and Researcher

- The information and any errors are mine
- This information was based on published data available as of mid- June 2020. As COVID-19 information is rapidly evolving, providers are reminded to consider additional information that has come to light since this presentation.

Case Counts and SARS-CoV-2 PCR Testing in Idaho

	5/19/2020	6/15/2020	7/13/2020	7/20/2020
Total lab-confirmed and probable	2,455	3,462 ($\Delta 556$)	11,402 ($\Delta 7940$)	15,266 ($\Delta 3864$)
Deaths	74	88 CFR = 2.5	102 ($\Delta 14$) CFR = 0.18	122 ($\Delta 20$) CFR = 0.52
Hospitalizations	213	270	500 ($\Delta 230$)	621 ($\Delta 121$)
ICU admissions	89	100	144 ($\Delta 44$)	186 ($\Delta 42$)
Healthcare personnel	295	366 ($\Delta 57$)	760 ($\Delta 394$)	908 ($\Delta 148$)
Total tests	37,847	65,306 ($\Delta 17,436$)	129,540 ($\Delta 64,234$)	150,142 ($\Delta 20,602$)

<https://coronavirus.idaho.gov>

Cases by Date State Notified



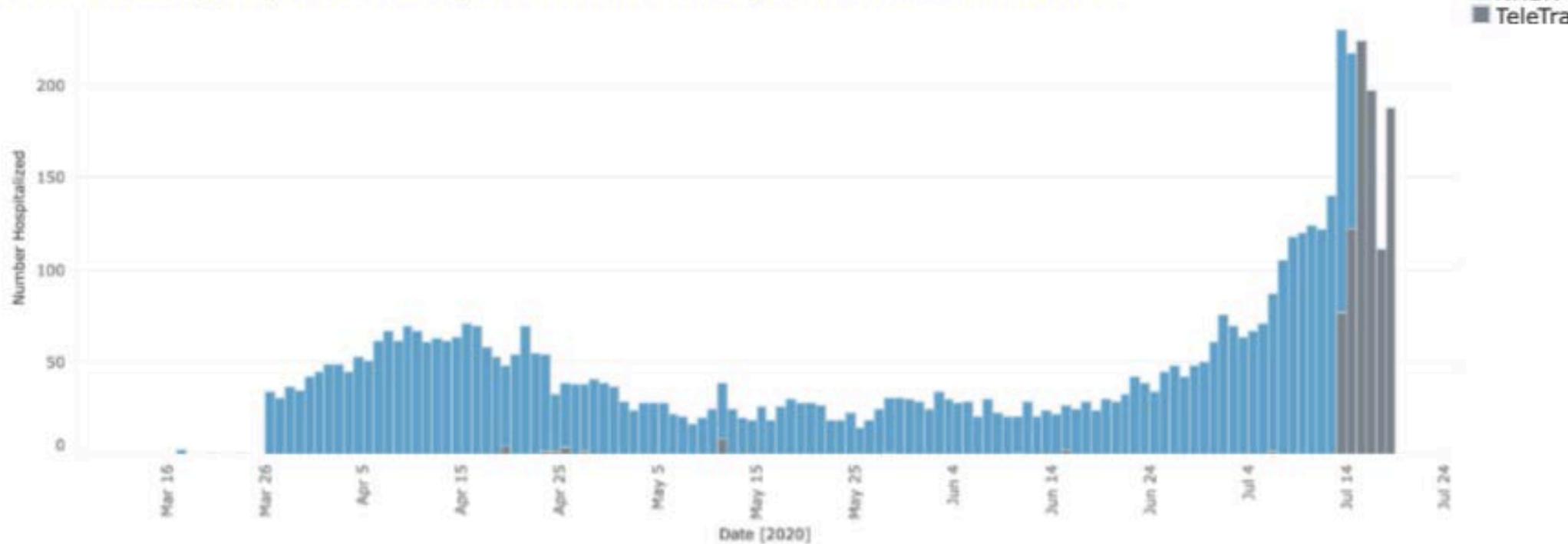
COVID-19 by Date of Onset



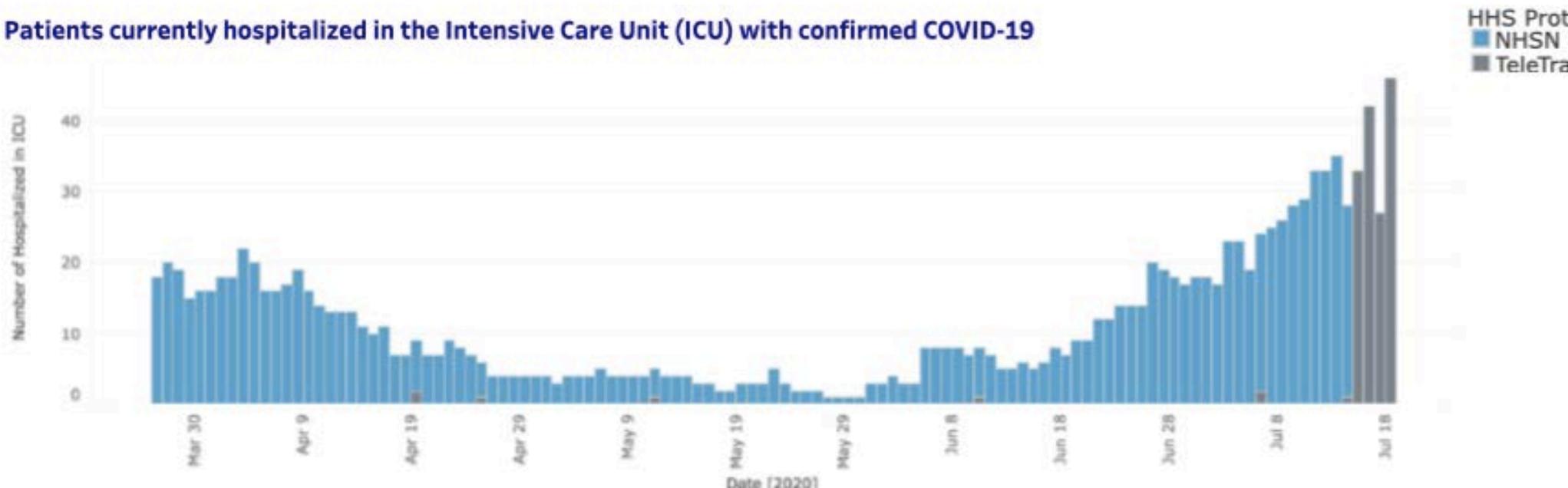
Weekly PCR Laboratory Tests Completed and Percent Positivity by Specimen Collection Date¹



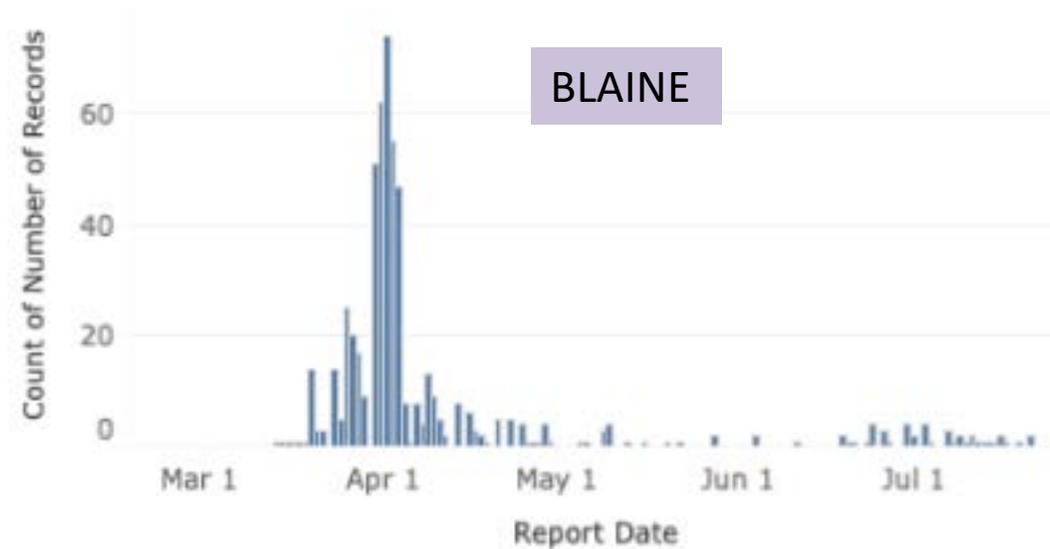
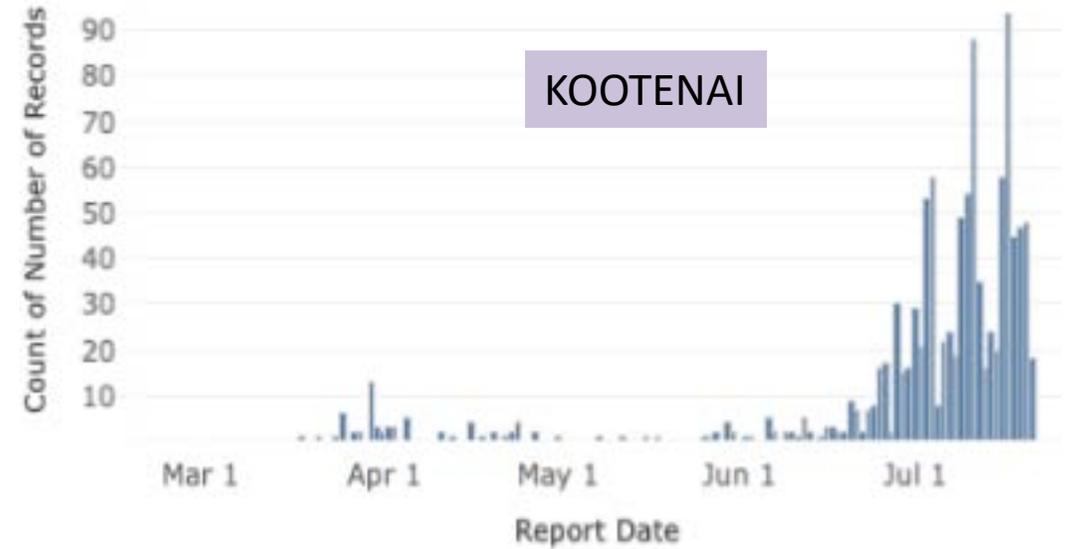
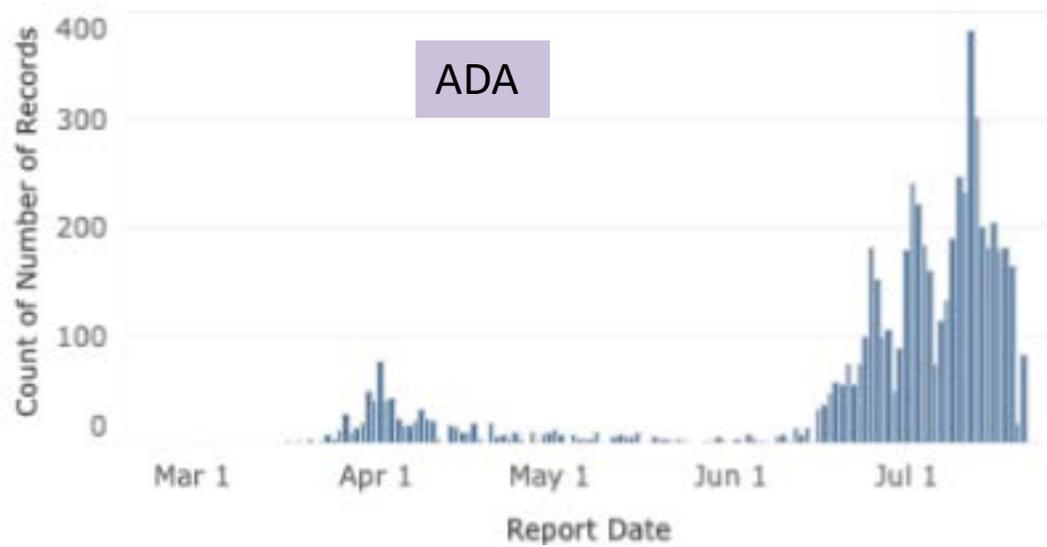
Patients currently hospitalized in an inpatient bed who have suspected or confirmed COVID-19



Patients currently hospitalized in the Intensive Care Unit (ICU) with confirmed COVID-19



Epidemic Curves for Selected Counties



*Note differences in scales for different counties

Hendrix MJ, et al. MMWR Weekly 2020;69:930-32.

- Cotton facial coverings or masks required in Missouri county.
- Hair stylist (A) developed COVID-19 and infected coworker (B) with whom she took non-mask wearing breaks with between clients.
- A and B stylists wore masks while working with clients, also masked.
- Worked combined 13 person-days with 139 clients while infectious
 - Contributor was delay in test results
- No clients or other stylists developed COVID-19 or COVID-19 symptoms.
- 4 of 4 household contacts of stylist A got COVID-19 infection.
- Thus, someone very infectious to others without a mask, did not cause illness in contacts where masks were worn.



Change in CDC Guidance on Duration of Isolation and Precautions for Adults with COVID-19 – CDC Position Paper

- Increasing evidence that replication-competent virus unlikely isolated after 10 days from illness onset in mild-moderate illness
 - May be longer in immune compromised and severe cases
- Virus titers begin to decline after symptom onset
- Investigation of 285 “persistently positive” persons, including 126 persons who developed recurrent symptoms, found no secondary infections among 790 contacts. Efforts to isolate replication-competent virus from 108 of these case patients were unsuccessful (Korea CDC, 2020).”
- Specimens from patients who recovered from an initial COVID-19 illness and then developed new symptoms and retested positive by RT-PCR did not have replication-competent virus detected (Korea CDC, 2020; Lu et al., 2020).
- Currently, 6 months after the emergence of SARS-CoV-2, there have been no confirmed cases of SARS-CoV-2 reinfection.

CDC Recommendations on Duration of Isolation and Precautions for Adults with COVID-19

- Isolation and precautions can generally be discontinued 10 days after symptom onset¹ and resolution of fever for at least 24 hours, without the use of fever-reducing medications, and with improvement of other symptoms.
 - Persons with severe illness or immune compromised, consider 10-20 days
- If no symptoms, isolation and other precautions can be discontinued 10 days after the date of their first positive RT-PCR test for SARS-CoV-2.
- For severely immunocompromised, a test-based strategy could be considered in consultation with infectious diseases experts.
- For all others, a test-based strategy is no longer recommended except to discontinue isolation or precautions earlier than 10 days.

CDC Recommendations on Duration of Isolation and Precautions for Adults with COVID-19 – ROLE OF TESTING

- For persons previously diagnosed with symptomatic COVID-19 who remain asymptomatic after recovery,
 - retesting is not recommended within 3 months after the date of symptom onset
 - quarantine is not recommended in the event of close contact with an infected person.
- For persons who develop new COVID-like symptoms <3 months after initial symptom onset, if an alternative etiology cannot be identified by a provider, can consider retesting in consultation with infectious disease experts
- For persons who never developed symptoms, the date of first positive RT-PCR test for SARS-CoV-2 RNA should be used in place of symptom onset date

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/duration-isolation.html>.

<https://www.cdc.gov/coronavirus/2019-ncov/hcp/disposition-hospitalized-patients.html>.

Treatment Updates

Cathy Oliphant, PharmD

Infectious Disease, Professor and Interim Chair, ISU College of Pharmacy

Treatment Updates

- Remdesivir - NIH Update 7/17/20
 - “In situations where supplies are limited, it recommends prioritizing remdesivir for use in hospitalized patients who require supplemental oxygen but not mechanical ventilation”
 - Based on data demonstrating that patients with severe COVID requiring oxygen, but not ventilation, had the most benefit from remdesivir (shorter recovery time)

ORIGINAL ARTICLE

Dexamethasone in Hospitalized Patients with Covid-19 — Preliminary Report

The RECOVERY Collaborative Group*

ABSTRACT

BACKGROUND

Coronavirus disease 2019 (Covid-19) is associated with diffuse lung damage. Glucocorticoids may modulate inflammation-mediated lung injury and thereby reduce progression to respiratory failure and death.

METHODS

In this controlled, open-label trial comparing a range of possible treatments in patients who were hospitalized with Covid-19, we randomly assigned patients to receive oral or intravenous dexamethasone (at a dose of 6 mg once daily) for up to 10 days or to receive usual care alone. The primary outcome was 28-day mortality. Here, we report the preliminary results of this comparison.

RESULTS

A total of 2104 patients were assigned to receive dexamethasone and 4321 to receive usual care. Overall, 482 patients (22.9%) in the dexamethasone group and 1110 patients (25.7%) in the usual care group died within 28 days after randomization (age-adjusted rate ratio, 0.83; 95% confidence interval [CI], 0.75 to 0.93; $P < 0.001$). The proportional and absolute between-group differences in mortality varied considerably according to the level of respiratory support that the patients were receiving at the time of randomization. In the dexamethasone group, the incidence of death was lower than that in the usual care group among patients receiving invasive mechanical ventilation (29.3% vs. 41.4%; rate ratio, 0.64; 95% CI, 0.51 to 0.81) and among those receiving oxygen without invasive mechanical ventilation (23.3% vs. 26.2%; rate ratio, 0.82; 95% CI, 0.72 to 0.94) but not among those who were receiving no respiratory support at randomization (17.8% vs. 14.0%; rate ratio, 1.19; 95% CI, 0.91 to 1.55).

CONCLUSIONS

In patients hospitalized with Covid-19, the use of dexamethasone resulted in lower 28-day mortality among those who were receiving either invasive mechanical ventilation or oxygen alone at randomization but not among those receiving no respiratory support. (Funded by the Medical Research Council and National Institute for Health Research and others; RECOVERY ClinicalTrials.gov number, NCT04381936; ISRCTN number, 50189673.)

The members of the writing committee (Peter Horby, F.R.C.P., Wei Shen Lim, F.R.C.P., Jonathan R. Emberson, Ph.D., Marion Mafham, M.D., Jennifer L. Bell, M.Sc., Louise Linsell, D.Phil., Natalie Staplin, Ph.D., Christopher Brightling, F.Med. Sci., Andrew Ustianowski, Ph.D., Einas Elmahi, M.Phil., Benjamin Prudon, F.R.C.P., Christopher Green, D.Phil., Timothy Felton, Ph.D., David Chadwick, Ph.D., Kanchan Rege, F.R.C.Path., Christopher Fegan, M.D., Lucy C. Chappell, Ph.D., Saul N. Faust, F.R.C.P.C.H., Thomas Jaki, Ph.D., Katie Jeffery, Ph.D., Alan Montgomery, Ph.D., Kathryn Rowan, Ph.D., Edmund Juszczak, M.Sc., J. Kenneth Bailie, M.D., Ph.D., Richard Haynes, D.M., and Martin J. Landray, Ph.D.) assume responsibility for the overall content and integrity of this article.

The affiliations of the members of the writing committee are listed in the Appendix. Address reprint requests to Drs. Horby and Landray at RECOVERY Central Coordinating Office, Richard Doll Bldg., Old Road Campus, Roosevelt Drive, Oxford OX3 7LF, United Kingdom, or at recoverytrial@ndph.ox.ac.uk.

*A complete list of collaborators in the RECOVERY trial is provided in the Supplementary Appendix, available at NEJM.org.

Drs. Horby, Lim, and Emberson and Drs. Haynes and Landray contributed equally to this article.

This article was published on July 17, 2020, at NEJM.org.

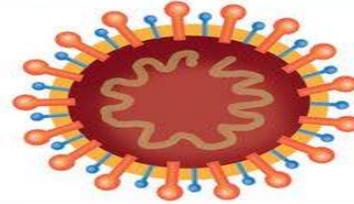
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COVID & Thrombosis

- Severe COVID can result in cytokine storm, systemic inflammatory response and coagulopathy (that is prothrombotic)
- The enhanced prothrombotic state induced by severe COVID is associated with venous and arterial microthrombi
- Data demonstrates incidence of VTE of up to 27% with mortality rates up to 40-60%
 - Rates up to 69% have been observed using routine ultrasound in ICU patients
- CDC estimates that ~90% of hospitalized COVID patients have at least one increased risk of thrombosis
- VTE prophylaxis is essential in these patients

CENTRAL ILLUSTRATION: Postulated Mechanisms of Coagulopathy and Pathogenesis of Thrombosis in COVID-19

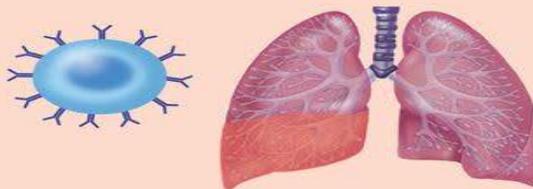
SARS-CoV-2



A Risk Factors

- Acute illness
- Bedridden, stasis
- Genetics
- Fever
- Diarrhea
- Sepsis
- Liver injury
- CKD
- COPD
- HF
- Malignancy

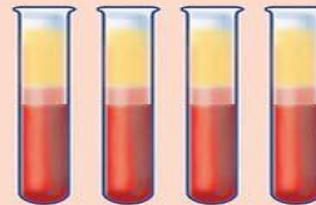
Inflammatory Response
Endothelial Dysfunction
Superimposed Infection



Lymphopenia
Inflammatory cytokines
↑IL-6, CRP

B Hemostatic Abnormalities

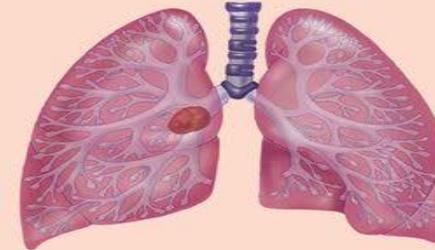
- Pulmonary microthrombi
- Intravascular coagulopathy
- Myocardial injury
- ↑Cardiac biomarkers



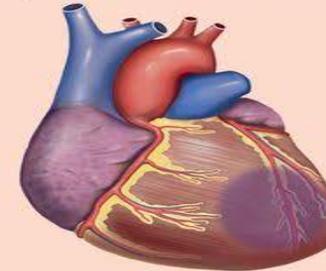
- ↑D-Dimer, FDPs, PT
- ↓↓Platelets

C Clinical Outcomes

Venous Thromboembolism



Myocardial Infarction



Disseminated Intravascular Coagulation



COVID & Risk of Thromboembolism

- Several studies have demonstrated the increased risk of VTE
 - Hubei, China Study
 - Demonstrated that 25% of patients who did not receive VTE prophylaxis developed DVTs
 - VTE prophylaxis decreased VTE incidence by up to 60%
 - Netherlands Study
 - Demonstrated an incidence of pulmonary embolism of 25% in ICU patients
 - 72% of these patients were receiving VTE prophylaxis
 - Italy Study
 - Demonstrated a cumulative VTE rate of 21%

COVID & Anticoagulation: Management

- NIH
 - <https://www.covid19treatmentguidelines.nih.gov/>
- WHO
 - <https://www.who.int/emergencies/diseases/novel-coronavirus-2019>
- International Society for Thrombosis and Haemostasis
 - <https://www.isth.org/page/covid19>
- American Society of Hematology
 - <https://www.hematology.org/covid-19/covid-19-and-vte-anticoagulation>
- Anticoagulation Forum
 - <https://acforum.org/web/>

COVID & Anticoagulation: Recommendations

- Bikdeli et al. COVID-19 and Thrombotic or Thromboembolic Disease: Implications for Prevention, Antithrombotic Therapy, and Follow-Up. JACC 2020;75(23). DOI: 10.1016/j.jacc.2020.04.031
- Barnes et al. Thromboembolism and anticoagulant therapy during the COVID-19 pandemic: interim clinical guidance from the anticoagulation forum. J of Thrombosis and Thrombolysis 2020;50:72-81
 - NIH
 - Anticoagulation Forum
- Spyropoulos et al. Scientific and Standardization Committee Communication: Clinical Guidance on the Diagnosis, Prevention and Treatment of Venous Thromboembolism in Hospitalized Patients with COVID-19. 27 May 2020.
<https://doi.org/10.1111/jth.14929>
 - International Society for Thrombosis and Haemostasis

COVID & Anticoagulation: Efficacy of Prophylaxis

- Tang et al. Anticoagulant treatment is associated with decreased mortality in severe coronavirus disease 2019 patients with coagulopathy. J Thromb Haemost. 2020;18:1094-99
 - 449 COVID patients
 - 99 received heparin (primarily LMWH)
 - DVT prophylaxis reduced 28 day mortality by 20% in patients with an SIC score ≥ 4 or D-dimer $\geq 3,000$ ng/ml (or 6x ULN)
 - 28-day mortality 40% vs 64.2%, $p=.029$ for SIC Score ≥ 4
 - 28-day mortality 32.8% vs 52.4%, $p=.017$ for elevated D-dimer
 - No increase in major bleeding

SIC = Sepsis Induced Coagulopathy

ISTH SIC score⁷

	Score	Range
Platelet count (X 10 ⁹ /L)	1	100 - 150
	2	< 100
PT-INR	1	1.2 - 1.4
	2	> 1.4
Total SOFA score*	1	1
	2	≥ 2
Total score for SIC	≥ 4	

*Total SOFA score is the sum of the four items (respiratory SOFA, cardiovascular SOFA, hepatic SOFA, and renal SOFA)

COVID & Anticoagulation: VTE Prophylaxis in non-ICU Patients

- All hospitalized patients with COVID should be considered for VTE prophylaxis
- Standard dose VTE prophylaxis
 - Enoxaparin 40 mg daily if BMI < 40
 - *Preferred over UFH – due to dosing schedule (once or twice daily)
 - BMI \geq 40: Enoxaparin 40 mg Q12
 - If CrCl < 30 ml/min, enoxaparin 30 mg daily
 - UFH – standard dose

COVID & Anticoagulation: VTE Prophylaxis in ICU Patients

- All hospitalized patients with COVID should be considered for VTE prophylaxis
- VTE prophylaxis Dosing
 - Enoxaparin 30 mg Q12 if BMI < 40
 - *Preferred over UFH – due to dosing schedule
 - BMI \geq 40: 40 mg Q12
 - *Up to 50% increase in obesity
 - If CrCl < 30 ml/min, enoxaparin 30 mg daily
 - UFH – standard dose
 - Data demonstrate that patients with D-dimer > 2,000 or SIC score \geq 4 benefit from BID dosing of enoxaparin
 - Data do not support treatment doses for prophylaxis
 - Use of higher-intensity anticoagulation regimens should be done in the context of a clinical trial

COVID & Anticoagulation: Duration of VTE Prophylaxis

- Extended post-discharge thromboprophylaxis should be considered for all hospitalized patients with COVID-19 that meet high VTE risk criteria
 - IMPROVE VTE score ≥ 4 ; IMPROVE VTE Score ≥ 2 plus D-dimer $> 2x$ ULN; advanced age; cancer; severe immobility; ICU admission; h/o VTE
- VTE prophylaxis post-discharge for 2 – 6 weeks
 - *Non-COVID trials have evaluated VTE prophylaxis (in medically ill) post-discharge using the following durations
 - Enoxaparin 6-14 days
 - Rivaroxaban (Xarelto) 31-39 days
 - Betrixaban (Bevyxxa) 35-42 days

VTE Risk Factors

- Previous VTE
- Thrombophilia
- Lower limb paralysis
- Current cancer
- Immobilization \geq 7 days
- ICU/CCU stay
- Age > 60 years

Bleeding Risk Factors

- Gastro-duodenal ulcer
- Bleeding prior 3 months
- Admission platelets < 50×10^9
- Hepatic failure
- ICU/CCU stay
- CV catheter
- Rheumatic diseases
- Current cancer

Sex ▾

Age ▾ years

GFR ▾ mL/min/m²

Reset

Probability of Symptomatic VTE

0.4%

Probability of Bleeding

Major **0.1%** Clinically Important **0.5%**

[Calculator](#)

[Instructions](#)

[IMPROVE Info](#)

[References](#)

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TABLE 3 Potential Drug Interactions Between Antiplatelet Agents and Investigational Therapies for COVID-19

Investigational COVID-19 Therapy	Mechanism of Action of COVID-19 Therapy	P2Y ₁₂ Platelet Receptor Inhibitors			Phosphodiesterase III Inhibitor
		Clopidogrel	Prasugrel	Ticagrelor	Cilostazol
Lopinavir/ritonavir	Lopinavir is a protease inhibitor; Ritonavir inhibits CYP3A4 metabolism increasing lopinavir levels.	CYP 3A4 Inhibition (minor pathway): Reduction in clopidogrel active metabolite. Do not coadminister or if available utilize P2Y ₁₂ platelet function assays for monitoring. † With limited clinical data, prasugrel may be considered as alternative, if no contraindications.	CYP3A4 Inhibition: Decreased active metabolite but maintained platelet inhibition. Can administer with caution.	CYP3A4 Inhibition: Increased effects of ticagrelor. Do not coadminister or if available utilize P2Y ₁₂ monitoring or consider dose-reduced ticagrelor.*	CYP3A4 Inhibition: Recommend decreasing dose to maximum of 50 mg twice a day.
Remdesivir	Nucleotide-analog inhibitor of RNA-dependent RNA polymerases.	Reported inducer of CYP3A4 (minor pathway): no dose adjustment recommended.	Reported inducer of CYP3A4 (major pathway): no dose adjustment recommended.	Reported inducer of CYP3A4 (major pathway): no dose adjustment recommended.	Reported inducer of CYP3A4 (major pathway): no dose adjustment recommended.
Tocilizumab	Inhibits IL-6 receptor: may potentially mitigate cytokine release syndrome symptoms in severely ill patients.	Reported increase in expression of 2C19 (major pathway) and 1A2, 2B6, and 3A4 (minor pathways): no dose adjustment recommended.	Reported increase in expression of 3A4 (major pathway) and 2C9 and 2C19 (minor pathway): no dose adjustment recommended.	Reported increase in expression of 3A4 (major pathway): No dose adjustment recommended.	Reported increase in expression of 3A4 (major pathway): no dose adjustment recommended.
Sarilumab	Binds specifically to both soluble and membrane-bound IL-6Rs (sIL-6R α and mIL-6R α) and has been shown to inhibit IL-6-mediated signaling: may potentially mitigate cytokine release syndrome symptoms in severely ill patients.	Reported increase in expression of 3A4 (minor pathways): no dose adjustment recommended.	Reported increase in expression of 3A4 (major pathway): no dose adjustment recommended.	Reported increase in expression of CYP3A4 (major pathway): no dose adjustment recommended.	Reported increase in expression of 3A4 (major pathway): no dose adjustment recommended.

Other drugs being studied to treat COVID-19 include azithromycin, bevacizumab, chloroquine/hydroxychloroquine, eculizumab, fingolimod, interferon, losartan, methylprednisolone, pirfenidone, and ribavirin. Drug-drug interactions between these medications and antiplatelet agents have yet to be identified. *Cangrelor, aspirin, dipyridamole, and glycoprotein IIb/IIIa inhibitors (eptifibatid, tirofiban, abciximab) are not known to interact with investigational therapies for COVID-19. †Monitoring of P2Y₁₂ levels can be assessed through the VerifyNow assay, or others. Evaluation of effect of protease inhibitors on P2Y₁₂ inhibitors has not been extensively studied. Dose reduction recommendations for P2Y₁₂ inhibitors or P2Y₁₂ platelet function assay monitoring is not commonly practiced.

IL = interleukin; other abbreviations as in Table 1.

TABLE 4 Potential Drug Interactions Between Anticoagulants* and Investigational Therapies for COVID-19

Investigational COVID-19 Therapies	Vitamin K Antagonists	Dabigatran	Apixaban	Betrixaban	Edoxaban	Rivaroxaban
Lopinavir/ritonavir	CYP2C9 induction: May decrease plasma concentration. Adjust dose based on INR.	P-gp inhibition: May increase plasma concentration. No dose adjustment recommended.	CYP3A4 and P-gp inhibition: Administer at 50% of dose (do not administer if initial dose is 2.5 mg twice daily).†	P-gp and ABCB1 inhibition: Decrease dose to 80 mg once followed by 40 mg once daily.	P-gp inhibition: Do not coadminister.	CYP3A4 and P-gp inhibition: Do not coadminister.
Tocilizumab	—	—	Reported increase in expression of 3A4 (major pathway): No dose adjustment recommended.	—	—	Reported increase in expression of 3A4 (major pathway): No dose adjustment recommended.
Interferon‡,	Unknown mechanism: Decreased dose may be needed.	—	—	—	—	—
Ribavirin	Mechanism not well known: Possibly decreased absorption of warfarin in the presence of ribavirin (156); increased dose may be needed.	—	—	—	—	—
Methylprednisolone	Unknown mechanism: Decreased dose may be needed.	—	—	—	—	—
Sarilumab§	—	—	Reported increase in expression of CYP3A4 (major pathway): No dose adjustment recommended.	—	—	Reported increase in expression of CYP3A4 (major pathway): No dose adjustment recommended.
Azithromycin	Unknown mechanism: Decreased dose may be needed.	P-gp inhibition: May increase plasma concentration. No dose adjustment recommended.	—	P-gp inhibition: Decrease dose to 80 mg once followed by 40 mg daily.	P-gp inhibition: VTE: Limit dose to 30 mg daily. Nonvalvular AF: No dose recommendation.	—
Hydroxychloroquine and chloroquine	—	—	—	—	—	—

Other drugs being studied to treat COVID-19 include bevacizumab, chloroquine/hydroxychloroquine, eculizumab, fingolimod, losartan, and pirfenidone. Drug-drug interactions between these medications and oral anticoagulants have yet to be identified. Bevacizumab has been reported to cause deep vein thrombosis (9%), arterial thrombosis (5%), and pulmonary embolism (1%). It is also reported to cause thrombocytopenia (58%). *Parenteral anticoagulants (including unfractionated or low-molecular-weight heparins, bivalirudin, argatroban, and fondaparinux) are non-CYP-metabolized and do not interact with any of the investigational agents. †These recommendations are based on the U.S. package insert. The Canadian package insert considers the combination of these agents to be contraindicated. ‡Interferon has been reported to cause pulmonary embolism (<5%), thrombosis (<5%), decreased platelet count (1%–15% with Alfa-2b formulation), and ischemic stroke (<5%). §Sarilumab has been reported to cause decreased platelet count, with decreases to <100,000 mm³ in 1% and 0.7% of patients on 200-mg and 150-mg doses, respectively. ||Reported with interferon alpha.

CYP = cytochrome P system; INR = international normalized ratio; P-gp = P-glycoprotein; other abbreviations as in Table 1.

COVID-19 Cases from the Infectious Disease Perspective

Sky Blue, MD

Sawtooth Epidemiology and Infectious Diseases

Case 1

- 32 yo woman
- Seen in ED 7/14/20 for cough
- Sent from outpt clinic for evaluation with SARS-CoV-2 NAAT pending
- Temp 100.4°F, HR 110, RR 20, O₂ sats 93-96% RA



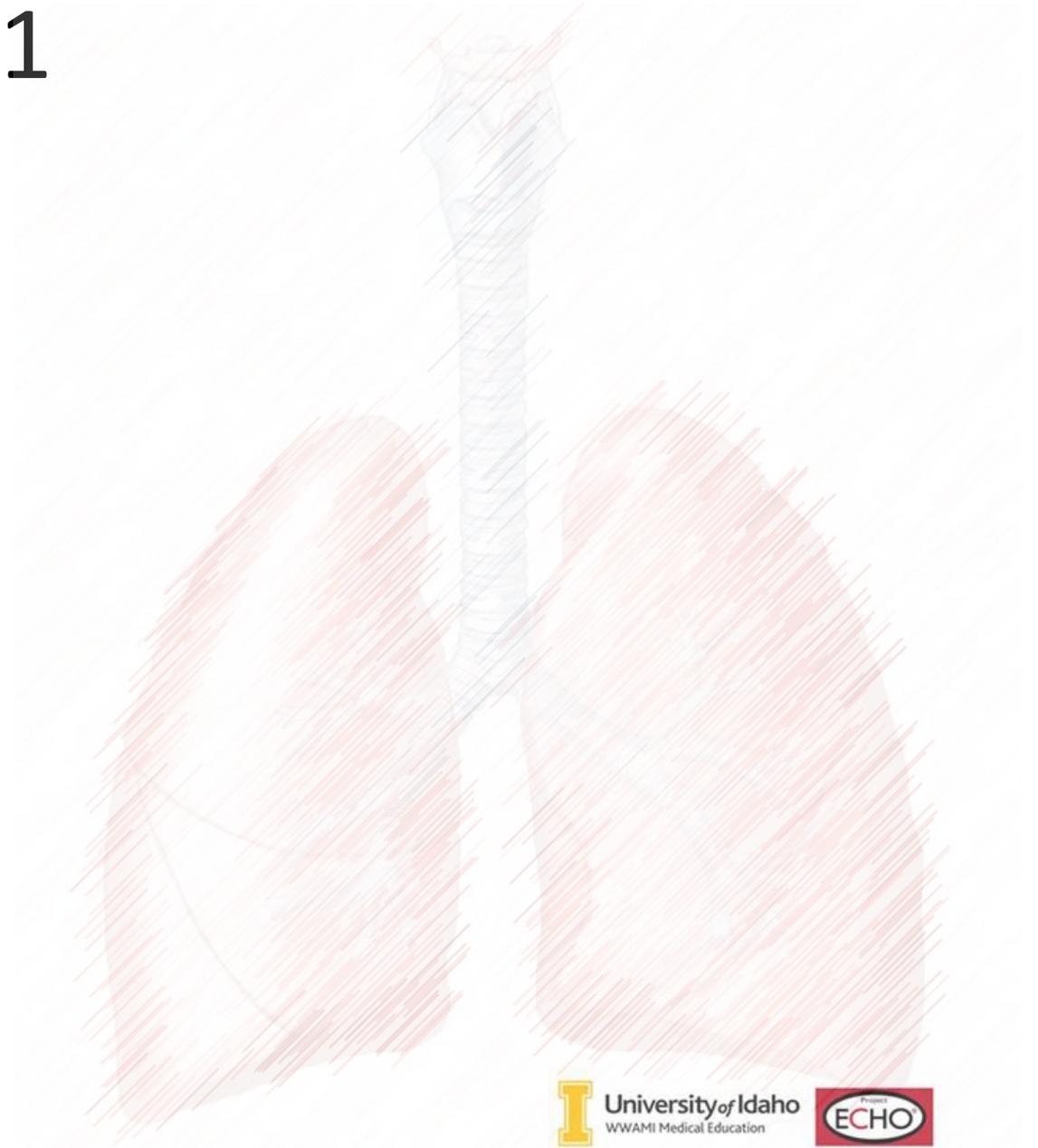
Case 1

- CT scan



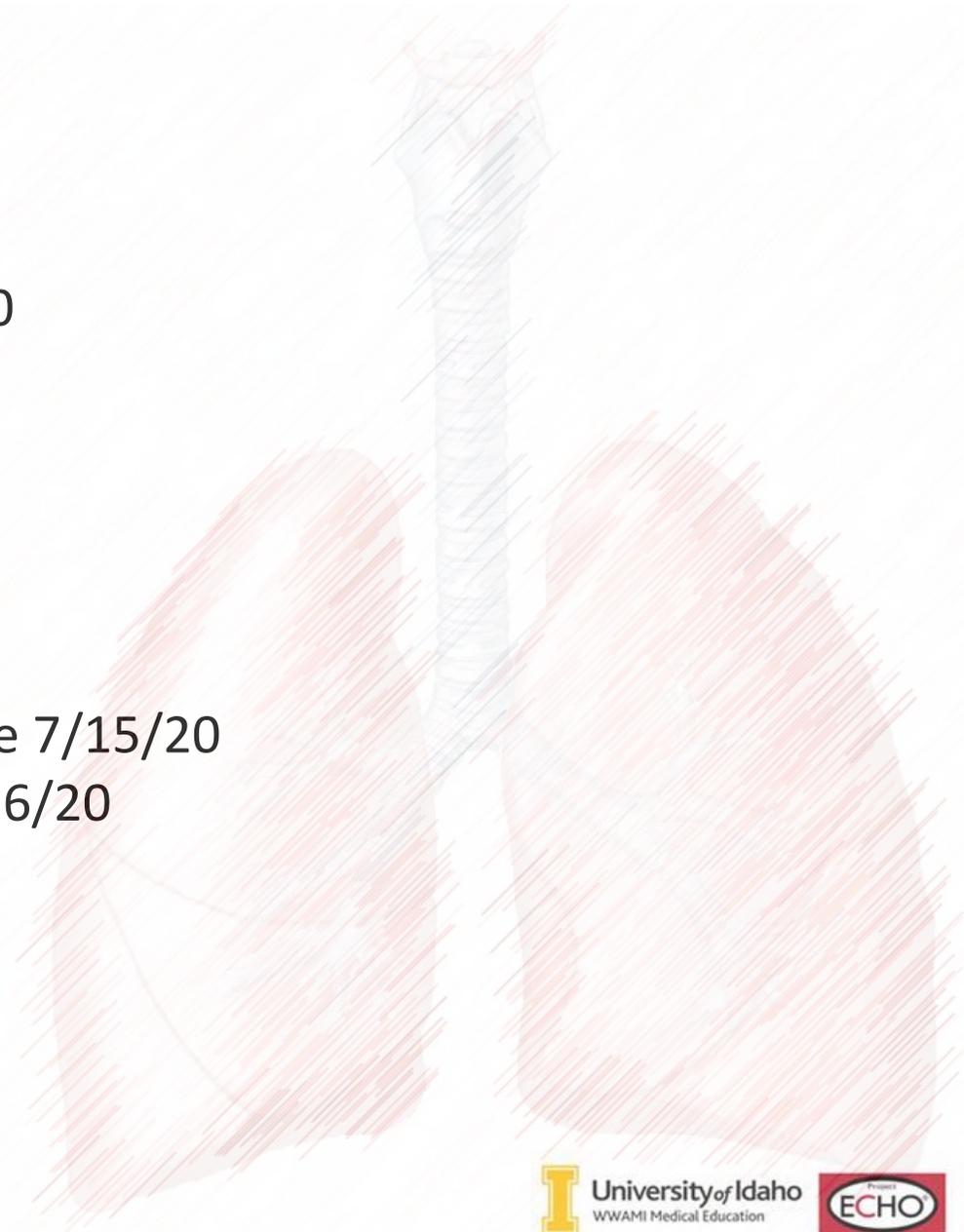
Case 1

- Decisions:
 - COVID-19?
 - Hospital admission?
 - Treatment? What options?
 - Anticoagulation?
- What other information do you need?



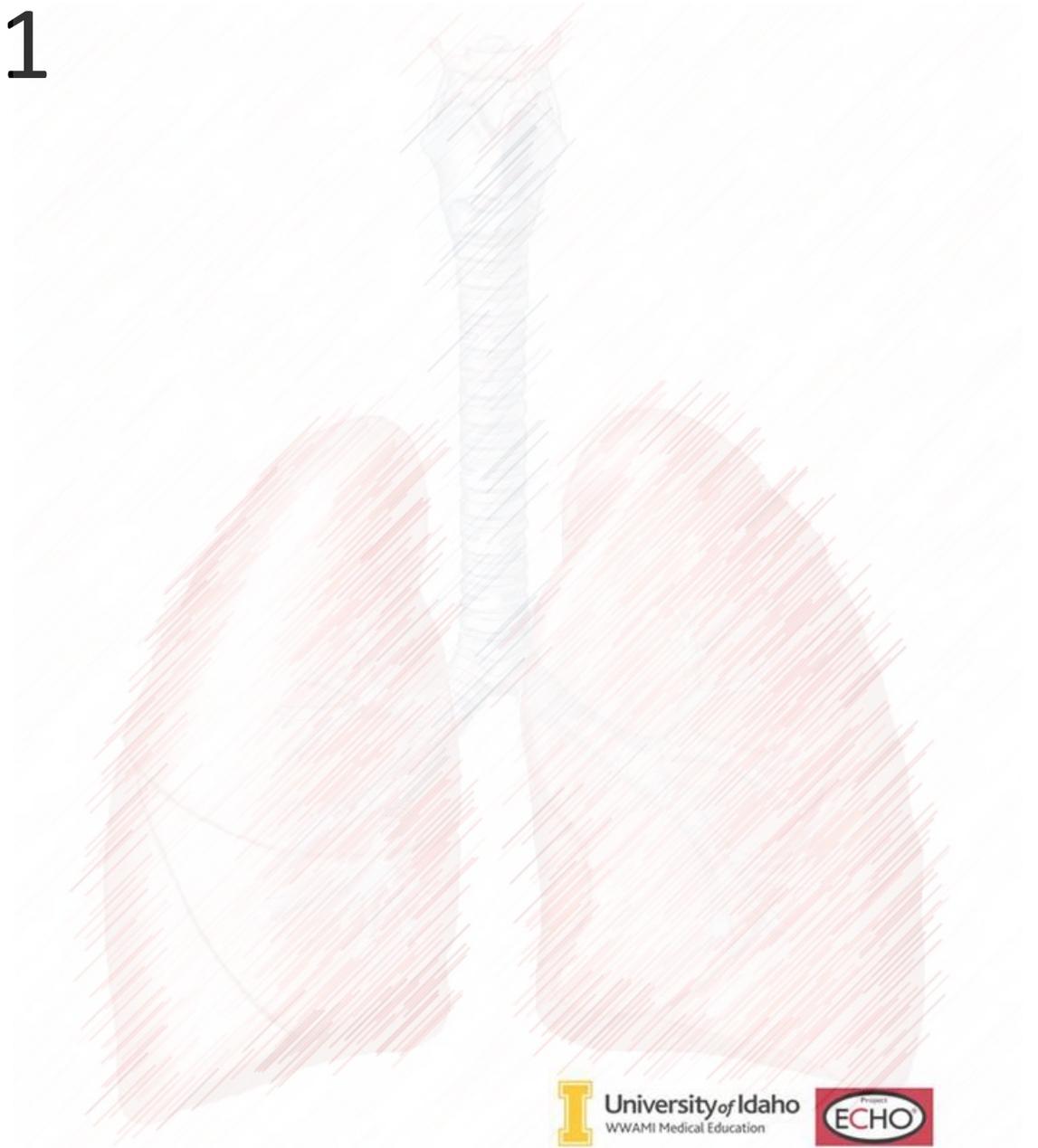
Case 1

- Sx onset
 - Exposure Sister SARS-CoV-2 + 7/6 through 7/10
 - 7/10/20 Fever, malaise
 - 7/12/20 Cough
- Risk Factors
 - BMI 36
- SARS-CoV-2 NAAT
 - Collected 7/15/20 Abbott ID Now (TMA) Positive 7/15/20
 - Collected 7/14/20 BDmax (RT-PCR) Positive 7/16/20
- Tmax 101.3
- O2 Sats 96% → 90% and was admitted
- Next day O2 Sats 94% RA



Case 1

- Labs
 - ANC/ALC 3700/1800=2
 - CRP 46 (nl 0-10)
 - ProCal <0.05
 - LDH 443
 - BNP <50
 - D-Dimer 1000



Case 1

- Labs

- ANC/ALC $3700/1800=2 \rightarrow 2100/1800=1.2$

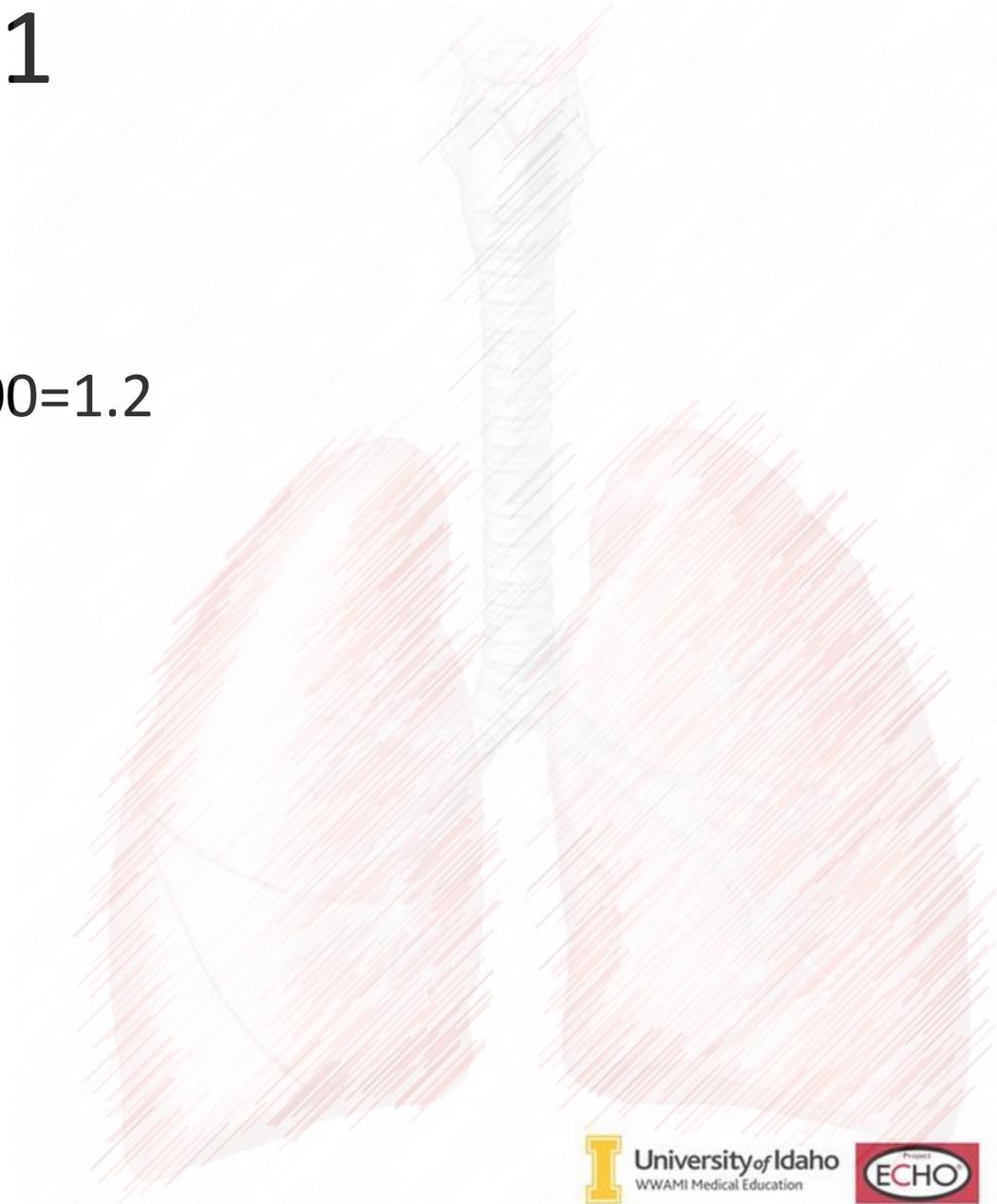
- CRP 46 (nl 0-10)

- ProCal $<0.05 \rightarrow <0.05$

- LDH 443

- BNP <50

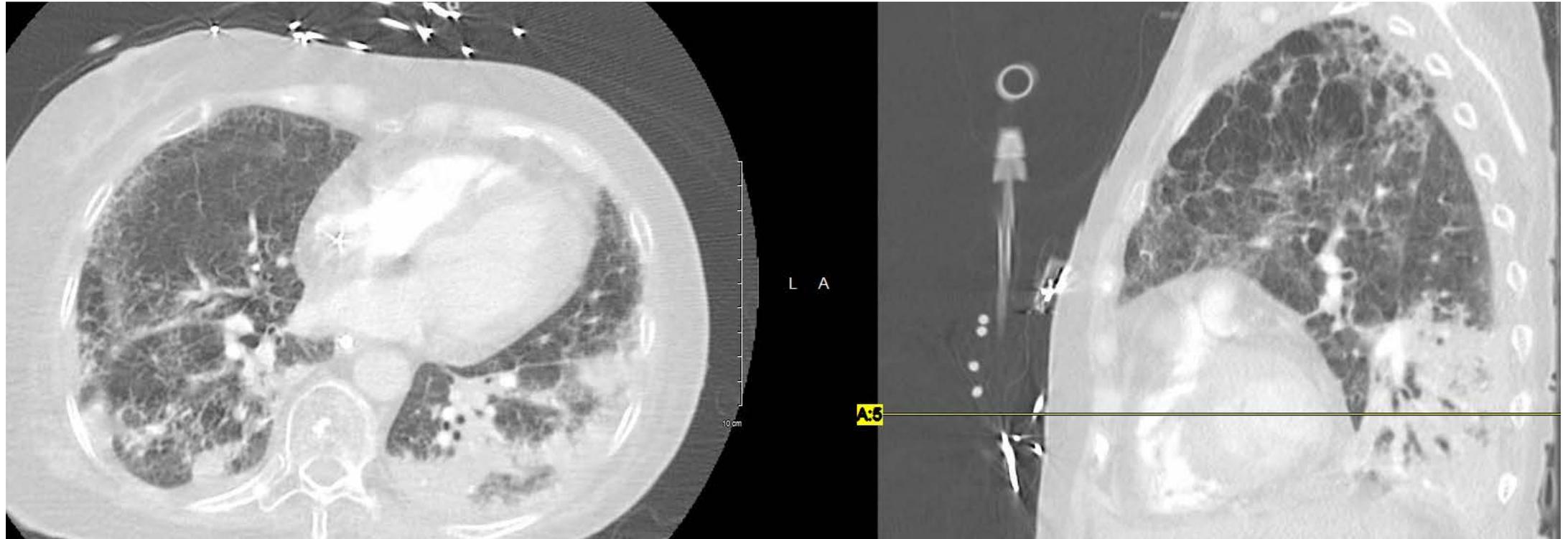
- D-Dimer $1000 \rightarrow 855$



Case 2

- 67 yo woman with baseline cognitive disorder.
- Was seen in OR and had been admitted 10 days ago for fever. CXR was abnormal but SAR-CoV-2 was negative twice. She was treated for possible UTI with cephalexin
- She was admitted for increased SOB and abnormal CT.
- Started on broad spectrum antibiotics
- On Hospital day 3 she was tested for COVID again and found to be SAR-CoV-2 positive (Abbott IDNow)

Case 2



Case 2

- Hospital course:
 - Intubated
 - Not given Remdesivir
 - Was given steroids per recovery trial
 - Prophylactic anticoagulation was increased to full-dose heparin drip due to suspicion of PE, elevated D-Dimer and inability to get CTPA
 - Had GI bleed and taken off heparin
 - Developed possible line associated candidiasis
 - Family decided on comfort care pathway

CRP **37.5->37.2->32->30->10->37->234**

ProCal 0.14->0.2->0.62->0.14->0.19

BNP 108->176->71-->**1600->1120->1300**

CK **584->461->97->31**

LDH 973->619->492

Ferritin 734->477

D-Dimer **1095->1600->1600->35,000!->3931->4584**

N/L ratio (**on steroids**) **8->5.3->32->10->6.9->11.4**

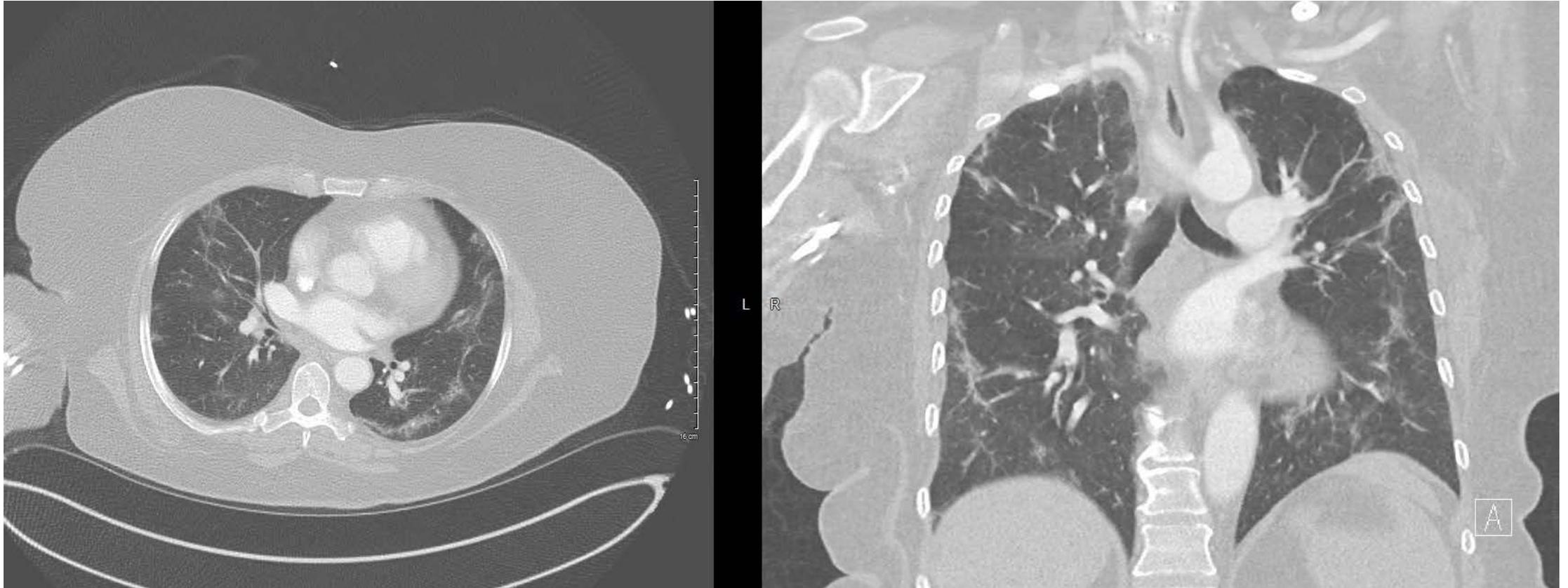
Case 3

- 69 yo woman
- Seen in ED 7/16/20 SOB
- Tested SARS-CoV-2 positive 6/29/20 after sx started the day prior
- Remained as an outpatient. Fever broke 7/8/20
- Increasing SOB and pulse ox at home registered 87% she called EMS



Case 3

- CT Scan



Small volume bilateral segmental and subsegmental pulmonary emboli.

JOIN US FOR OUR NEXT SESSION!

For information, please visit uidaho.edu/echo

- Tuesday, July 28 at noon MT

Ongoing Resource List

RESOURCES FROM TODAY'S SESSION AND PAST SESSIONS CAN BE FOUND IN OUR ONGOING RESOURCE LIST.

<https://iecho.unm.edu/sites/uidaho/download.hns?i=440>