

48-year-old woman with hemoptysis

Rebecca Baron, MD

Nora Osman, MD

Disclosures

- Honoraria Medscape, Novo Nordisc for Dr. Osman

LONGWOOD

ND TO LECHMERE
VIA PARK & GOVERNMENT CTR

ROADMAP

- **INTRODUCTION:**

- Case

- **END:**

- Q&A

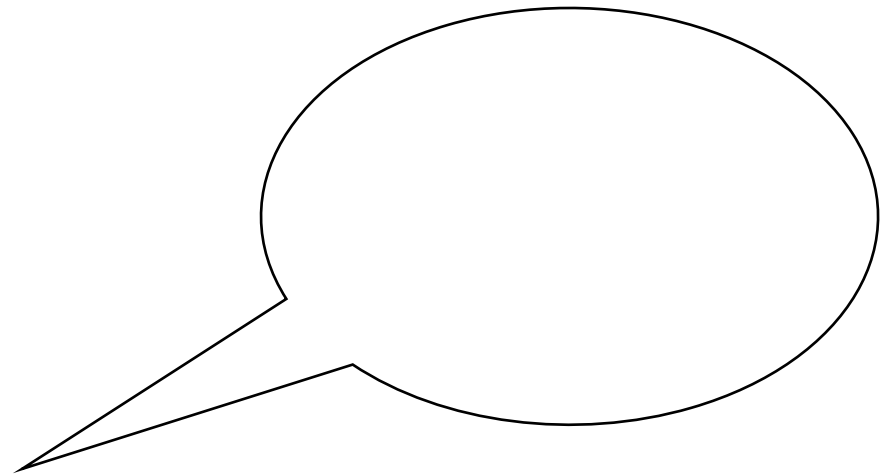
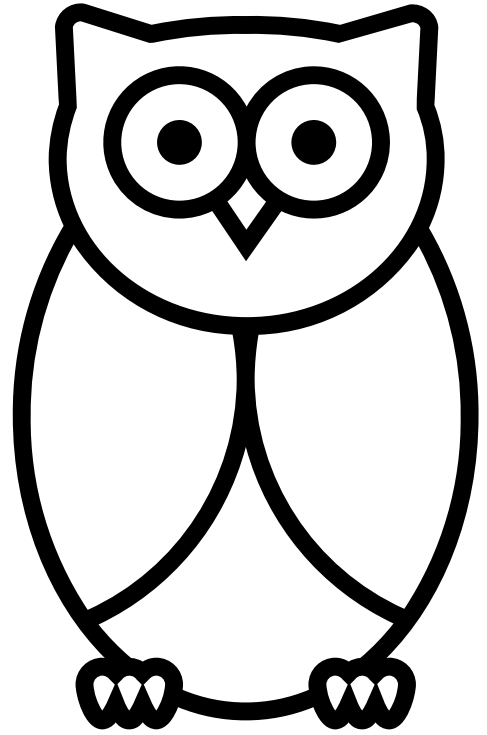
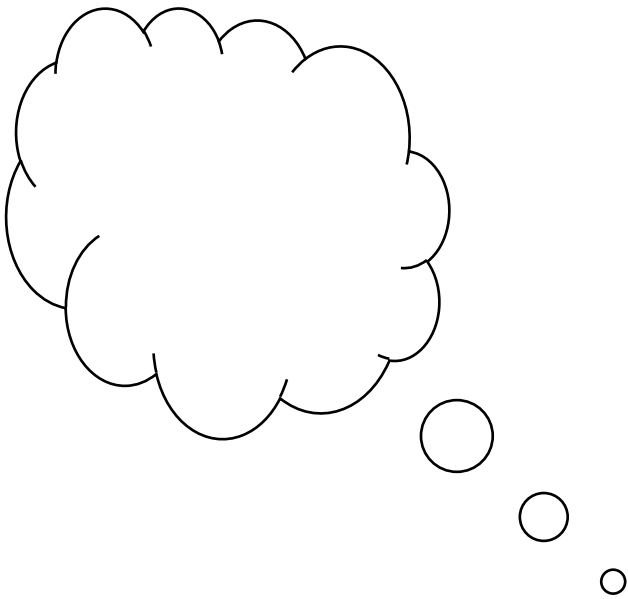


T GREEN LINE

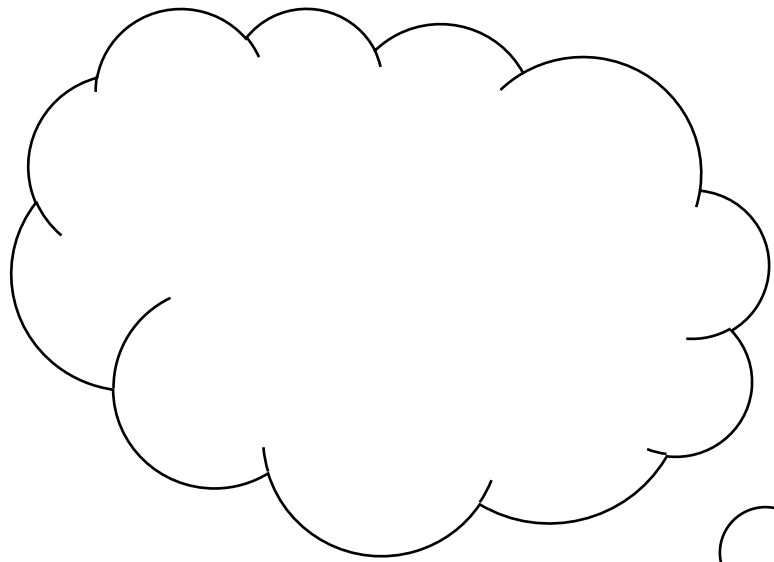


Longwood Medical and Academic
with Adjacent Neighborhoods

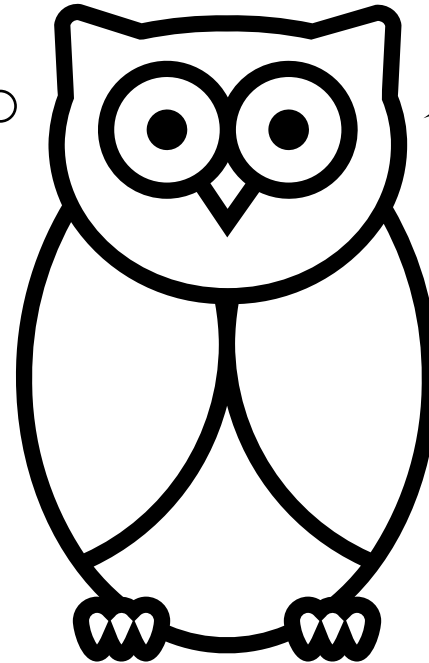
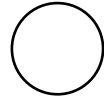
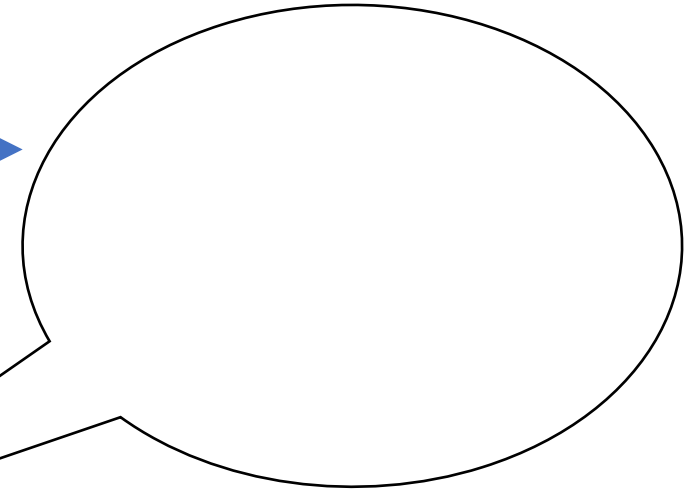




Why do we ask learners
to SHOW THEIR WORK?

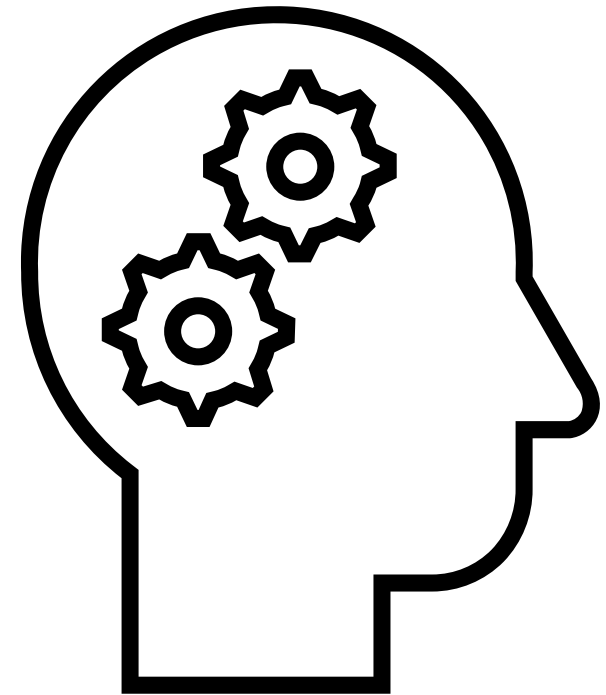


Can we communicate
our thinking clearly?



***SOME* DIAGNOSTIC ERRORS**

- Anchoring (and its cousin premature closure)
- Availability bias (and its cousin recency bias)
- Attribution
- Heuristics – rule of thumb

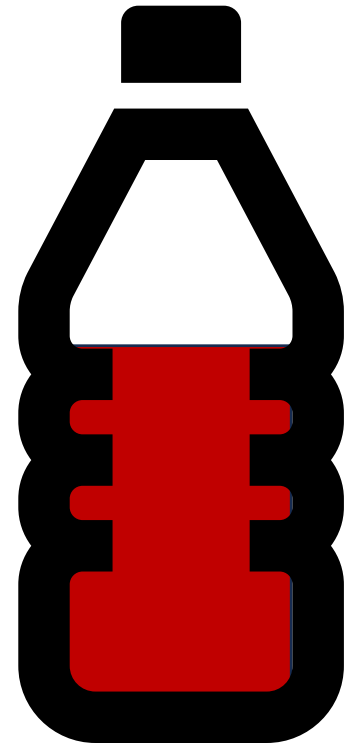


***SOME* DIAGNOSTIC ERRORS**

- Anchoring - holding onto a diagnosis despite contradictory evidence
 - Premature closure – ending investigation too early
- Availability bias – making decision based on how easily information comes to mind (often this is based on emotion)
 - Recency bias – the most recent thing that happened
- Attribution – attributing symptoms to unrelated person/character/context
- Heuristics – rule of thumb (if you have an appendix, it's appendicitis)

48-yo Eritrean woman presents to BWH in December with large volume hemoptysis

- Began coughing up blood yesterday and through the night – full of clots, bright red
- Thinks she coughed up more than a 16-oz bottle of blood, brings in a bottle that is >50% full
- Coughing has not stopped
- Had some chest pain which stopped



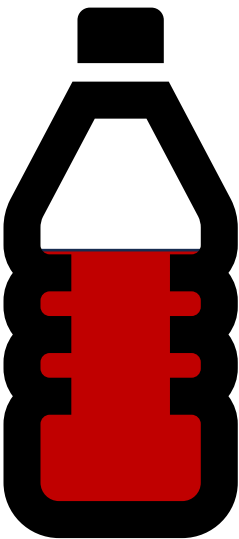
TIMELINE

March

November

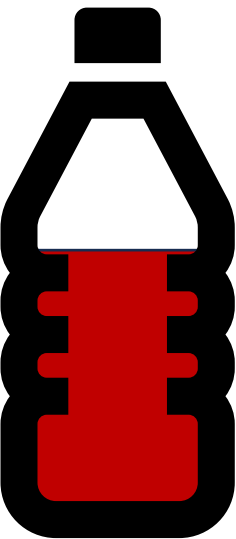
December

- In her usual state of excellent health until this year.
- March hemoptysis – treated for pneumonia
- November hemoptysis – CT shows “irregular nodularity in LLL/lingula”
- Treated for pneumonia again
- In between episodes, no hemoptysis



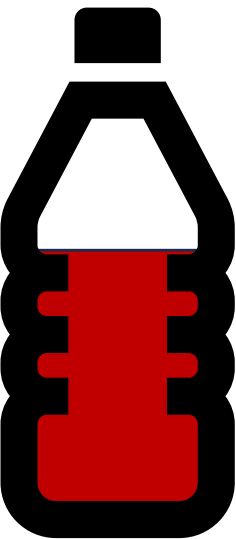
ROS

- Has lost ~3.5 kg in the past two weeks, but weight stable over past year
- Has had some night sweats and sweating while eating
- Appetite, bowels normal
- Are there other questions we should be asking to clarify our thinking?



ROS

- Has lost ~3.5 kg in the past two weeks, but weight stable over past year
- Has had some night sweats and sweating while eating
- Appetite, bowels normal
- No change in her menses, no other bleeding,
- No lumps or bumps, rashes, pain in joints
- Nothing...



More information

PMH:

- Accident/trauma at 3yo;
No known details
- Breast abscess treated
in Eritrea with cautery
- Breast augmentation
2017
- G3P1 (2SAB)

SH:

- Born Eritrea, lives in MD
- Last trip home 2 y ago
- No tobacco, vapes,
drugs
- Does not work
- Married, lots of family
in the US

Physical Exam

36.7 °C (98.1 °F) | P 86 | BP 119/61 | RR 23 | SpO2 98 % (Room air) | 135 lb

General Pt is lying in bed in NAD with sister at bedside

HEENT: MMM, clear conjunctiva without pallor, no scleral icterus, no cervical LAD

COR: RRR, no MRG, no LE edema, 2+ pulses bilaterally.

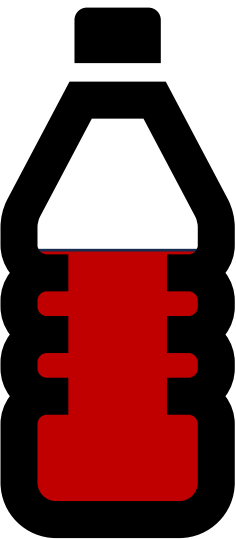
Chest: Linear scar over L breast, along with thicker scar corresponding to prior treatment of breast infection. Two small, circular scars under R breast (pt unsure of origin of these)

Pulm: CTAB, no increased work of breathing

Abd: Soft, non-tender, non-distended

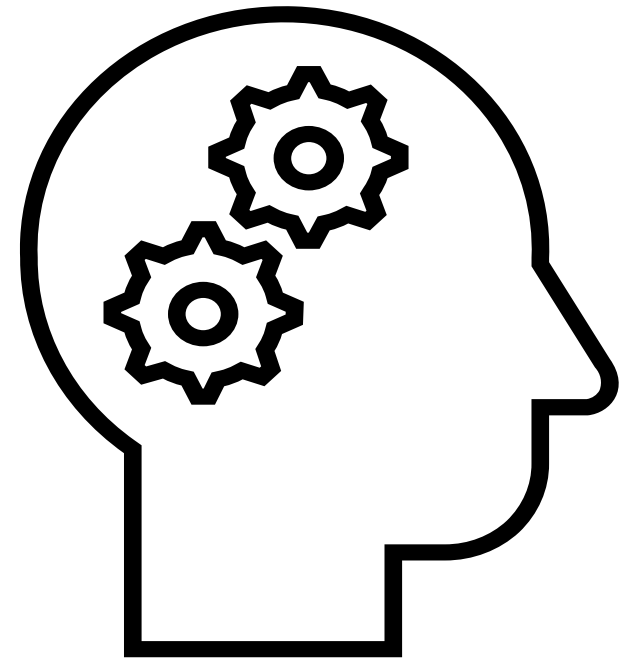
Extremities: No deformities

Skin: No erythema, no jaundice, no pallor



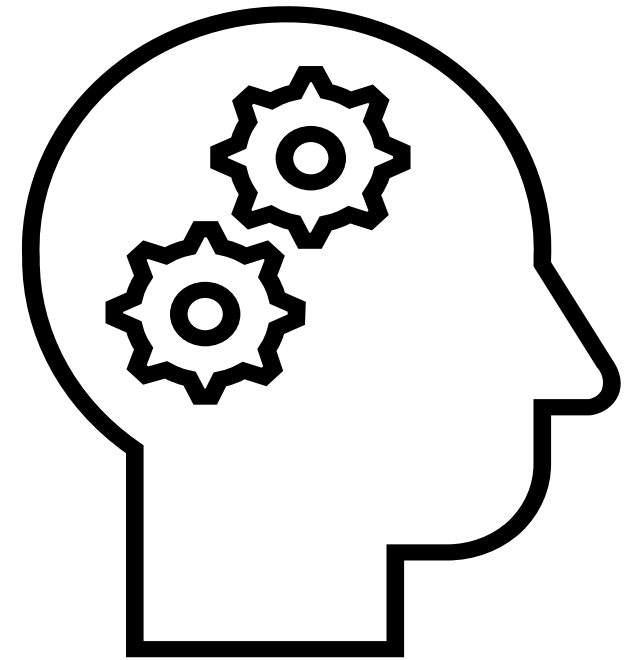
Show your work – how does how we are thinking about the case inform what we do next? And...

- Anchoring
- Availability bias
- Attribution
- Heuristics – rule of thumb



Show your work – how does how we are thinking about the case inform what we do next? And...

- Anchoring
 - She's from Eritrea so it's TB until proven otherwise
- Availability bias
 - It's xmas, and I had a patient once who was dx with lung cancer at xmas and it was so sad...
- Attribution
 - SLE more common given ancestry
- Heuristics – rule of thumb
 - It's MGR so it's endometriosis (but probably TB)

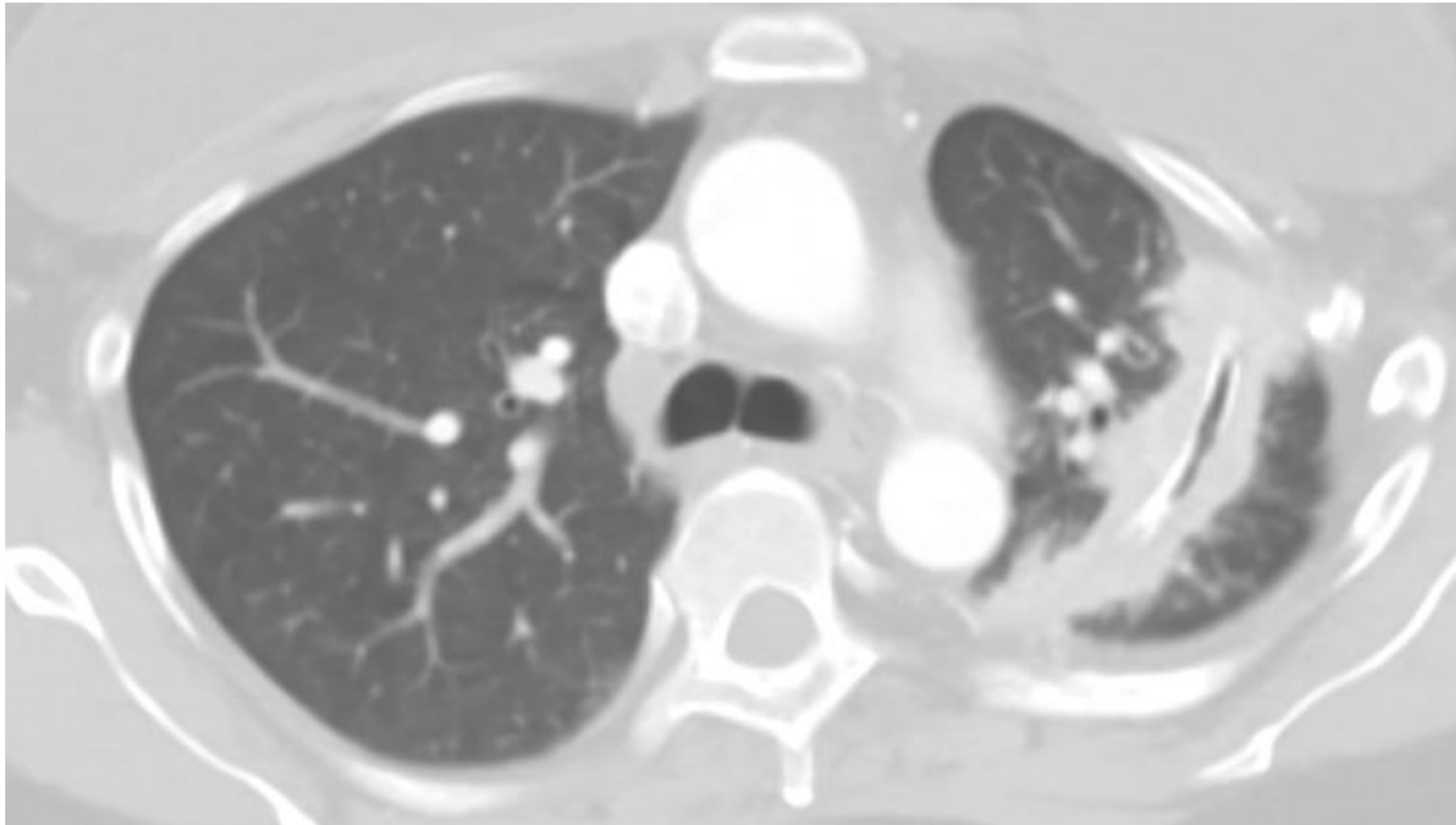


Normal labs

Component	12/23/23 1639
Ref Range & Units	
WBC	8 . 65
4.00 - 10.00 K/uL	
RBC	4 . 17
3.90 - 6.00 M/uL	
HGB	12 . 3
11.5 - 16.4 g/dL	
HCT	37 . 1
36.0 - 48.0 %	
PLT	301
150 - 450 K/uL	

Troponin T-hs Gen5	0 - 9 ng/L	<6
PT	11.5 - 14.5 sec	13.0
PT-INR	0.9 - 1.1	1.0
Lipase (U/L)	13 - 60 U/L	29
		
Total Protein	6.4 - 8.3 g/dL	7.8
Albumin	3.5 - 5.2 g/dL	4.1
Globulin	2.2 - 4.2 g/dL	3.7
AST (SGOT)	10 - 50 U/L	21
ALT (SGPT) (U/L)	10 - 50 U/L	12
Alk Phos	35 - 130 U/L	71
Bilirubin (Total)	0.0 - 1.0 mg/dL	<0.2
Bilirubin (Direct)	0.0 - 0.3 mg/dL	<0.2
Sodium	136 - 145 mmol/L	140
Potassium	3.4 - 5.1 mmol/L	3.8
Chloride	98 - 107 mmol/L	103
Carbon Dioxide	22 - 31 mmol/L	27
BUN	6 - 23 mg/dL	6
Creatinine	0.50 - 1.20 mg/dL	0.54
Glucose	70 - 100 mg/dL	98
Calcium	8.8 - 10.7 mg/dL	9.3
eGFR (Creatinine)	>59 mL/min/1.73m2	113
 Estimated glomerular filtration rate calculated using the CKD-EPI refit equation.		

IMAGING



What happened next

Admitted to medicine, negative pressure room

Medicine worried
Surgery consulted
Everyone worried



Life-Threatening Hemoptysis

Rebecca M. Baron, M.D.

*Pulmonary and Critical Care Medicine
Brigham and Women's Hospital, MGB*

Disclosures

- None

Hemoptysis: minor vs. massive

- Of course, be certain it's a pulmonary source
- Minor = bloody secretions that do not compromise the airway or breathing
- **Submassive / massive** = hemorrhage that compromises the airway or respiratory status: ~ 250cc / 24H period

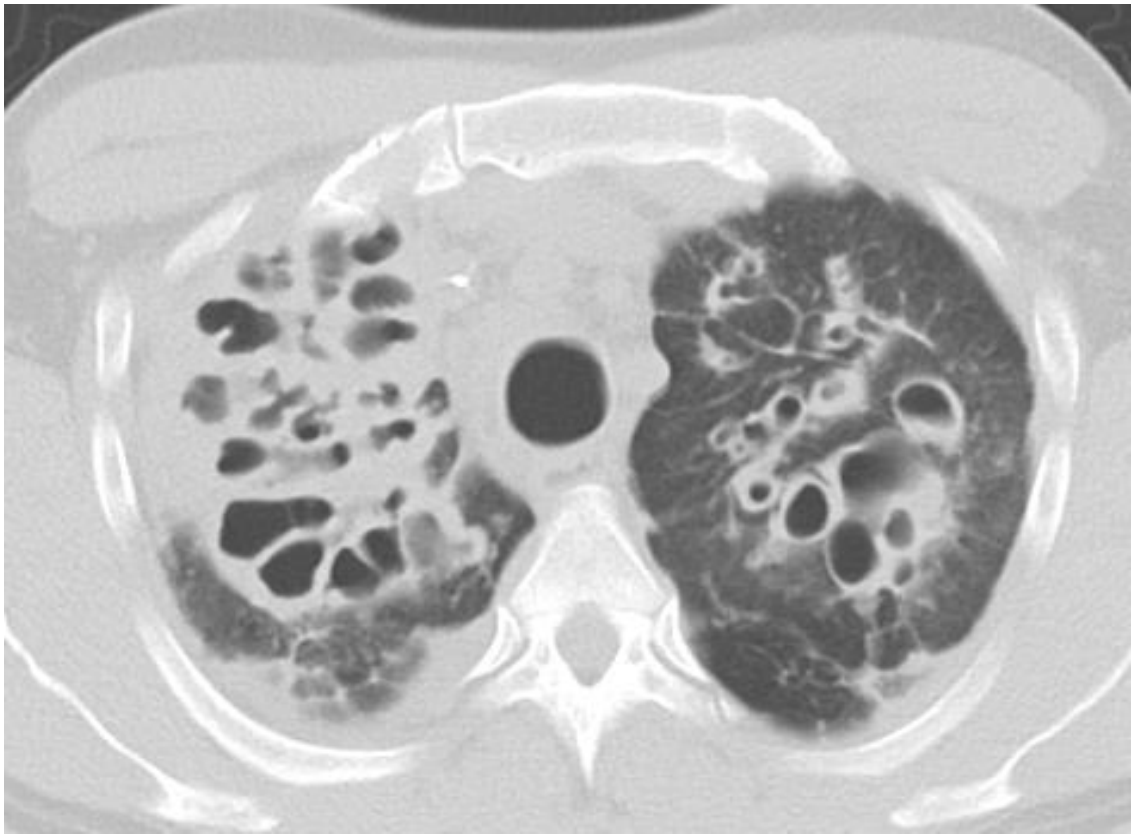


Is the lung-bleeding focal?? Can we localize, intervene?

Table 1 Etiologies of life-threatening hemoptysis

Intrinsic pulmonary parenchymal disease

* Bronchiectasis	Sarcoidosis, cystic fibrosis, tuberculosis, nontuberculous mycobacterial, fungal
* Pulmonary infections	Tuberculosis, fungal, necrotizing pneumonia, mycetoma, lung abscess, parasitic infection (<i>Paragonimus westermani</i>)
* Pulmonary malignancy	Bronchogenic carcinoma, endobronchial metastases, bronchial adenoma
Pulmonary vascular	Non-iatrogenic: arteriovenous malformation, subepithelial bronchial artery (Dieulafoy), aortic aneurysm with erosion, pulmonary embolism (septic or thrombotic) Iatrogenic injuries: Pulmonary artery injury from pulmonary artery catheter, aortobronchial fistula due to aortic graft or stent, airway stent, biopsy complications from bronchoscopic procedures
Pulmonary trauma	Penetrating chest injury, blunt force chest injury



Severe cystic bronchiectasis in CF

More Our Wheelhouse: Diffuse lung bleeding; likely med mgmt

Medication and toxins

Cocaine, bevacizumab, anticoagulants and antiplatelet medications, nitrogen dioxide

Collagen vascular diseases involving the lung

Systemic lupus erythematosus, granulomatosis with polyangiitis or other vasculitides, anti-glomerular basement membrane disease, idiopathic hemosiderosis, amyloidosis, Behcet disease

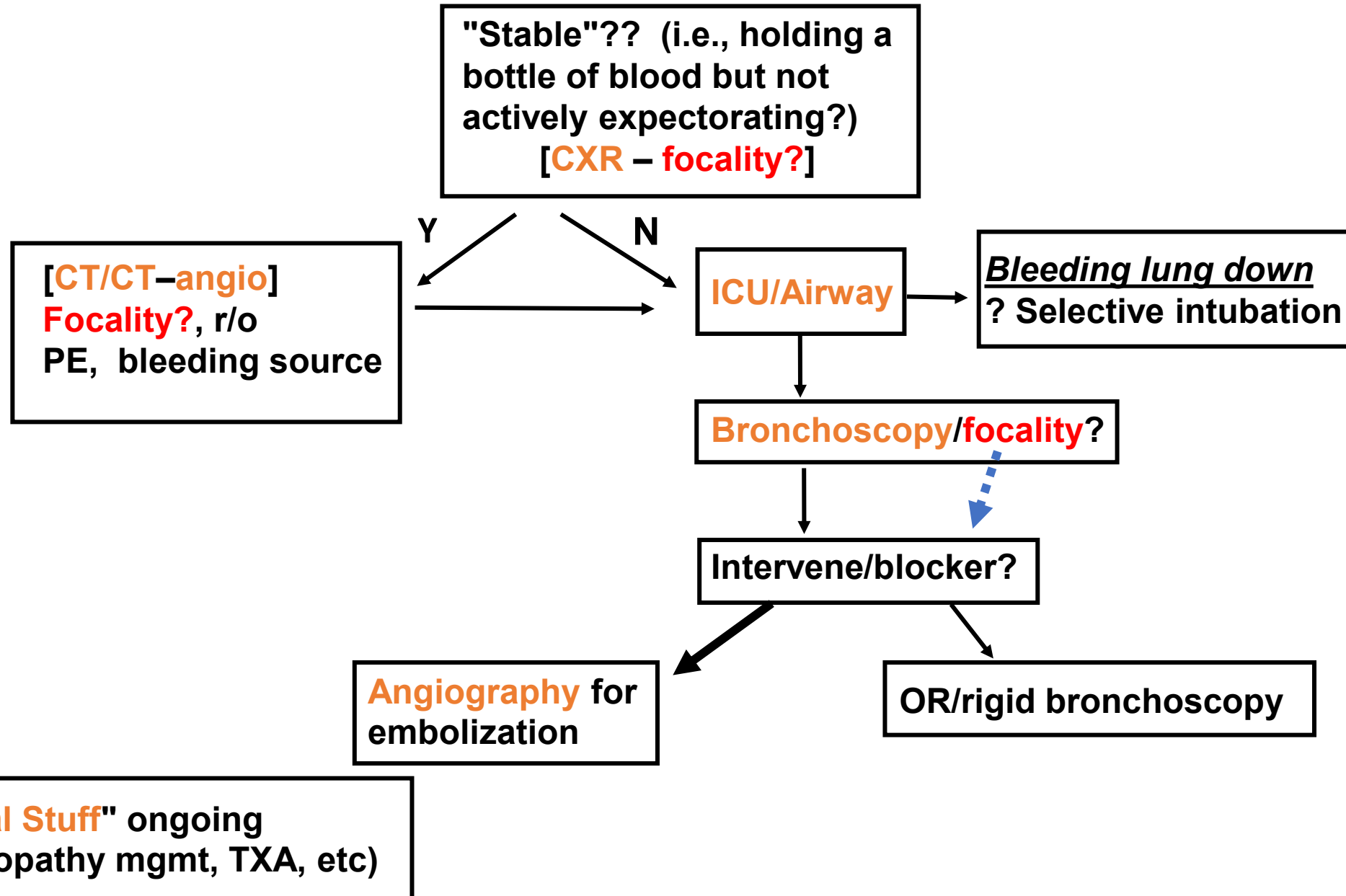
Cardiovascular diseases

Pulmonary edema from heart failure, mitral stenosis, tricuspid endocarditis, congenital heart disease

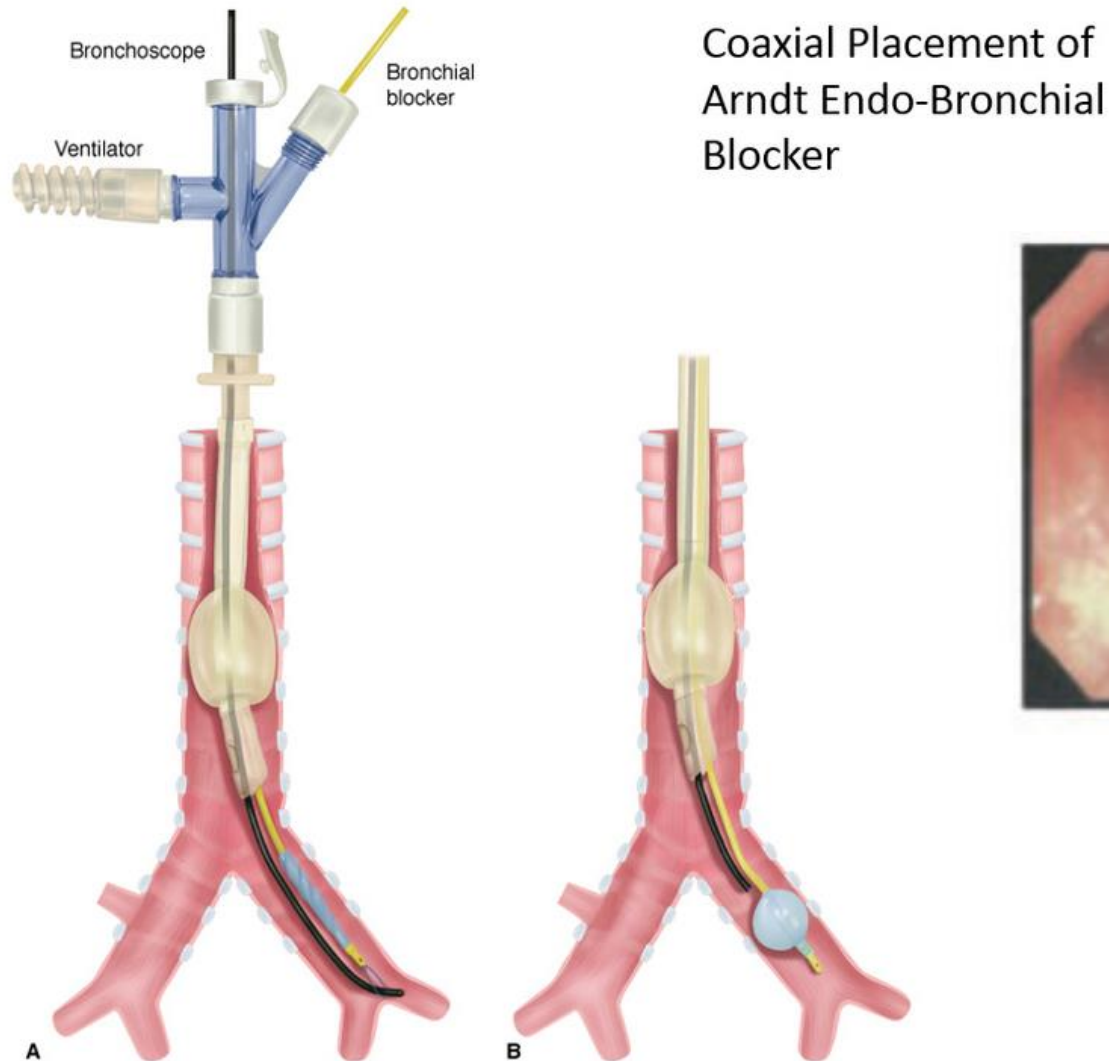
Bleeding disorders

Disseminated intravascular coagulation, thrombocytopenia, von Willebrand disease, platelet dysfunction

Massive Hemoptysis: "Do Something"



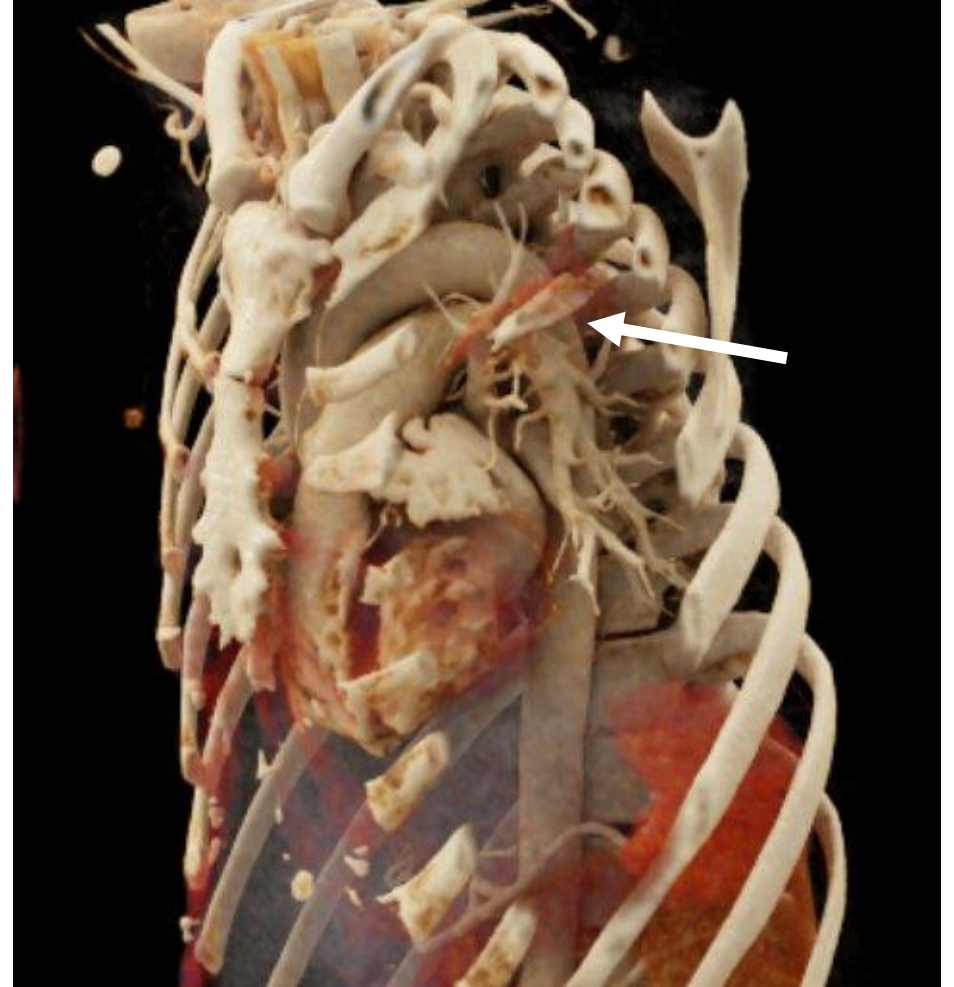
Harrowing (or cool) times in the ICU: Isolate/Control the bleeding for focal source



R and L mainstem bronchi

...to avoid seeing this...

So, what on earth is going on??



Now, what about the rib??

A rare case of massive hemoptysis: Long-term complication of thoracotomy; rib fracture

Emine Guzey¹, Murat Yalcinsoy¹, Muhammed Reha Celik², Ramazan Kutlu³, Unal Akel¹

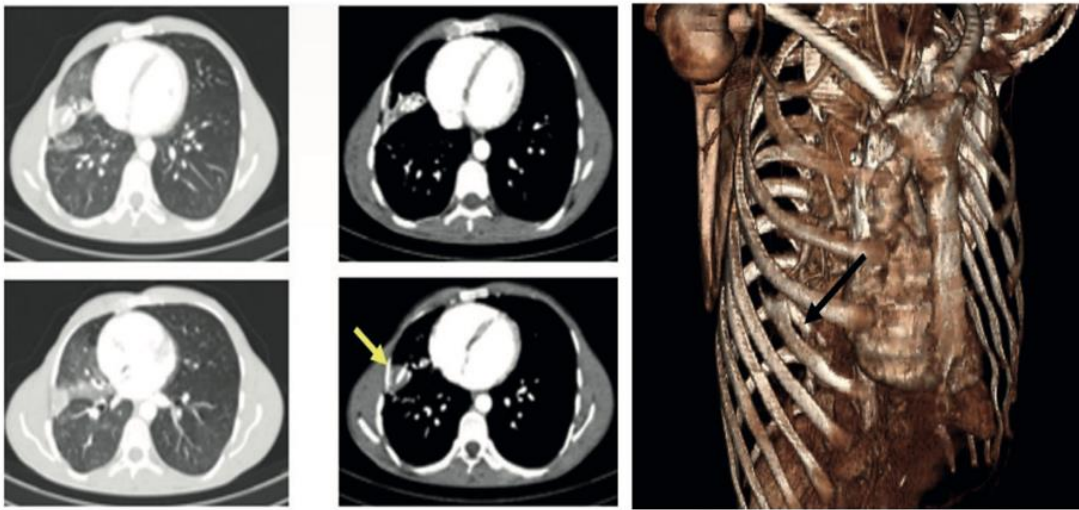


Figure 2. Consolidated lung area in the middle-lower zone of the right lung, in which bone density is monitored and with a ground glass appearance around it (yellow arrow). Fracture in right 4, 5, 6th ribs and laceration with rib part in the parenchyma (black arrow)

Non-union and especially displaced rib fractures at higher risk for later complications (maybe even 20+ years later??).



Figure 3. Middle lobectomy material extracted with bone fragment.

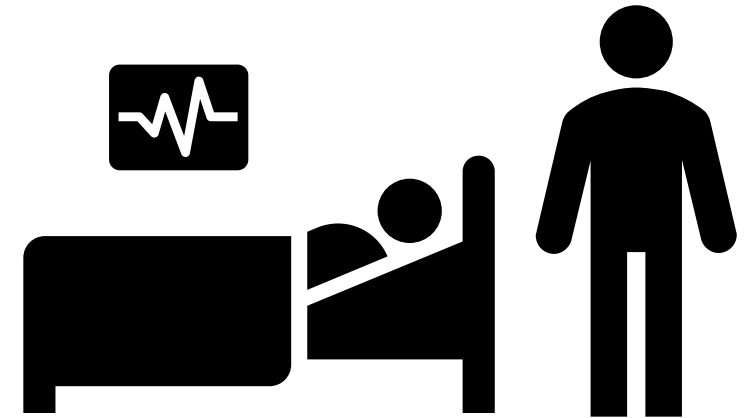


What
happened
next

What
happened
next



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What
happened
next



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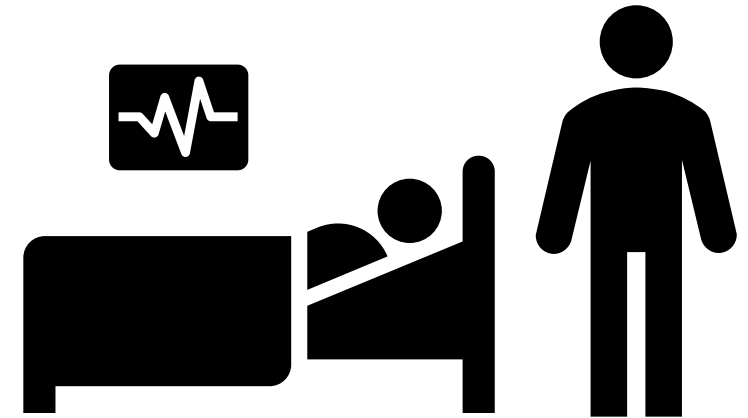
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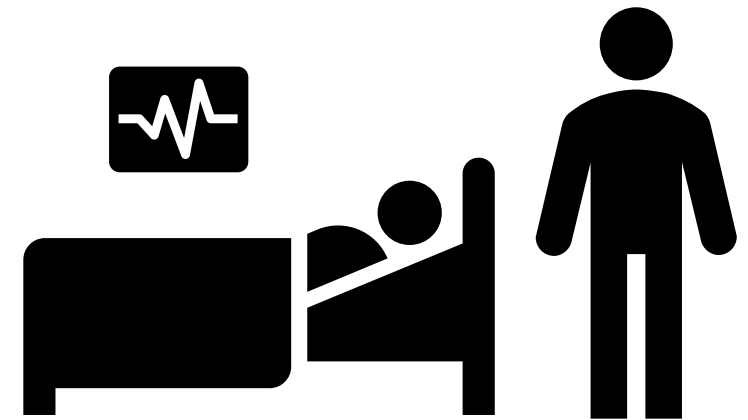
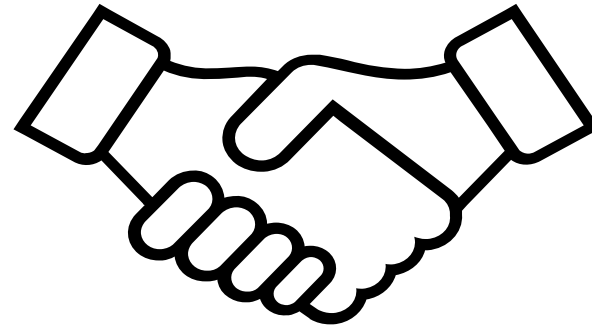
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No, thank you.



What
happened
next



Denouement

VATS – alarming, “...lung glued to chest and heart”

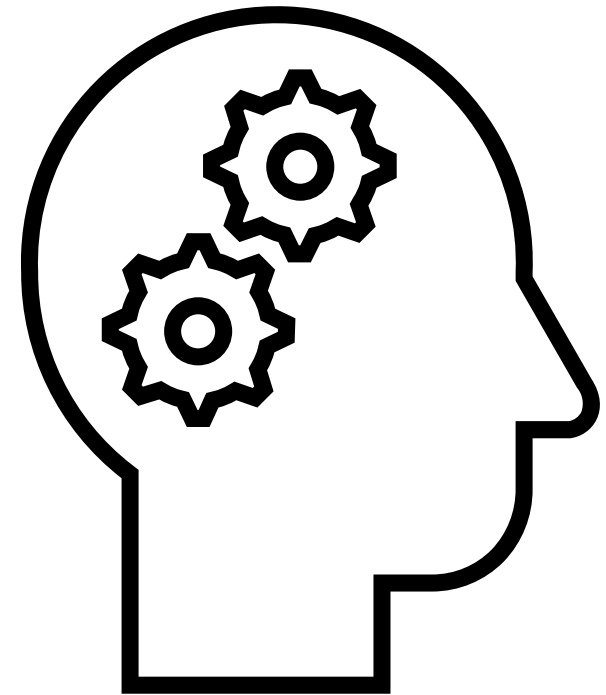
Return to OR - lobectomy. Large piece of rib pointing straight down at the main left pulmonary artery

Possibly a piece of bone from a childhood trauma “flail” segment

Did very well, returned for f/u, fully healed

Take home points – slide 1

- Remember to be aware of cognitive errors
- Invest in the therapeutic alliance from the start, reinforce



Take-homes - slide 2

- Be wary of large-volume hemoptysis
- Traditional metrics of bleeding are different for lung sources vs. more commonly seen GI sources
- For massive hemoptysis, is important to "think" and "do" in parallel
- For focal sources, seek early help from IR and surgery
- For diffuse sources, etiology and treatment of underlying cause usually most important

THANKS!!

