

# 48-year-old woman with hemoptysis

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# Disclosures

- Honoraria Medscape, Novo Nordisc for Dr. Osman

# LONGWOOD

ND TO LECHMERE  
VIA PARK & GOVERNMENT CTR

## ROADMAP

- **INTRODUCTION:**

- Case

- **END:**

- Q&A

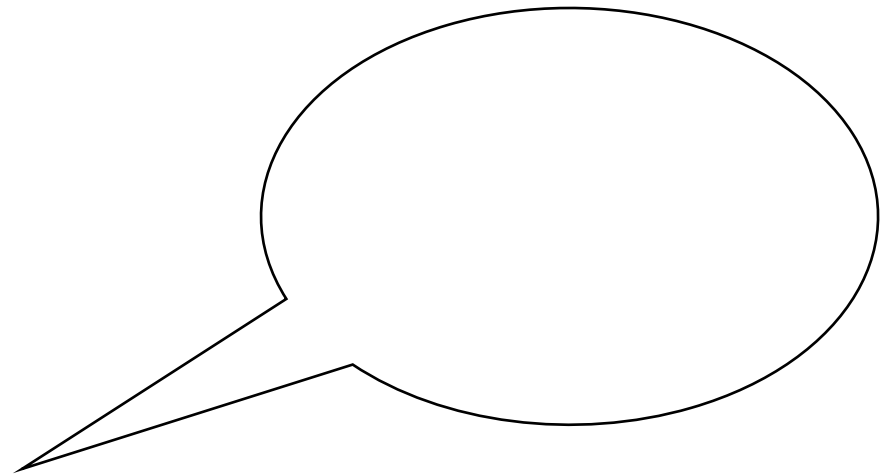
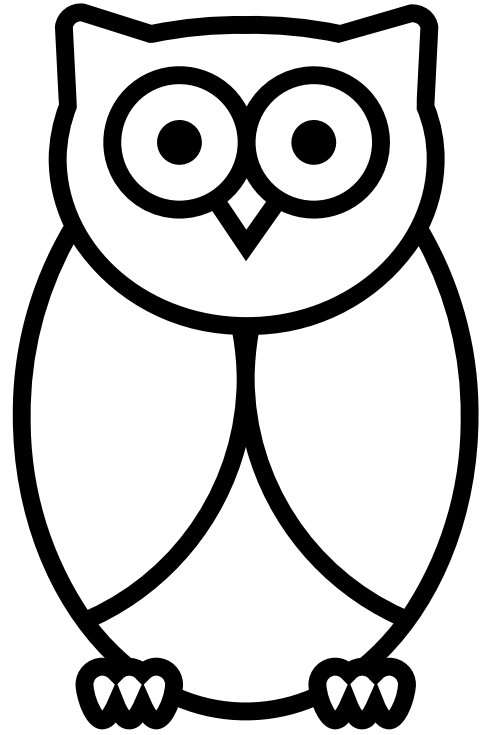
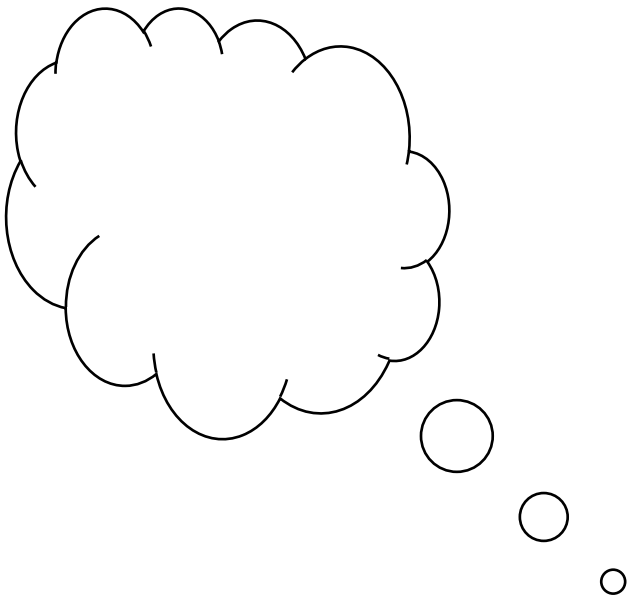


**T GREEN LINE**

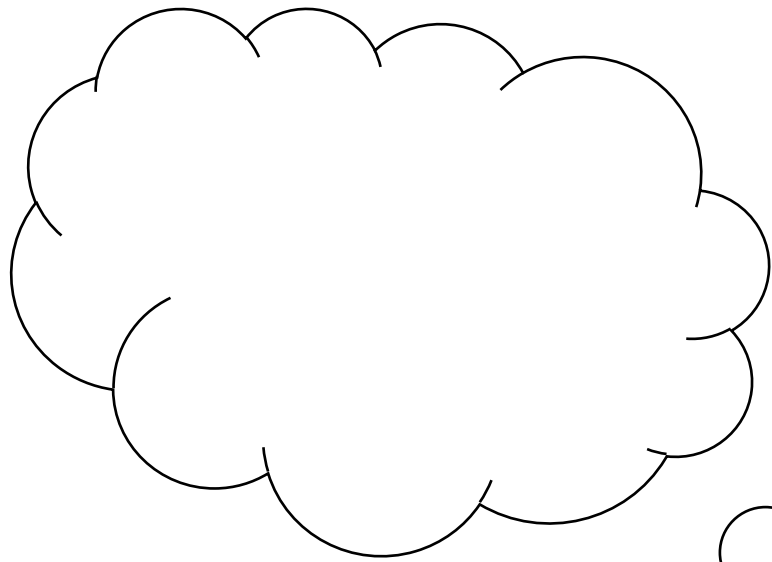


**Longwood Medical and Academic**  
with Adjacent Neighborhoods

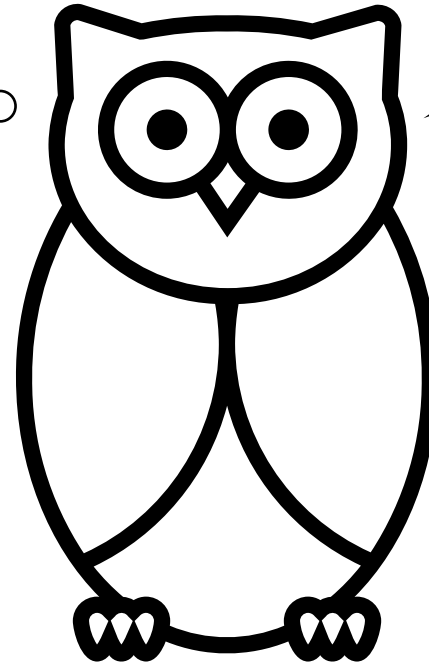
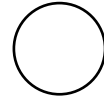
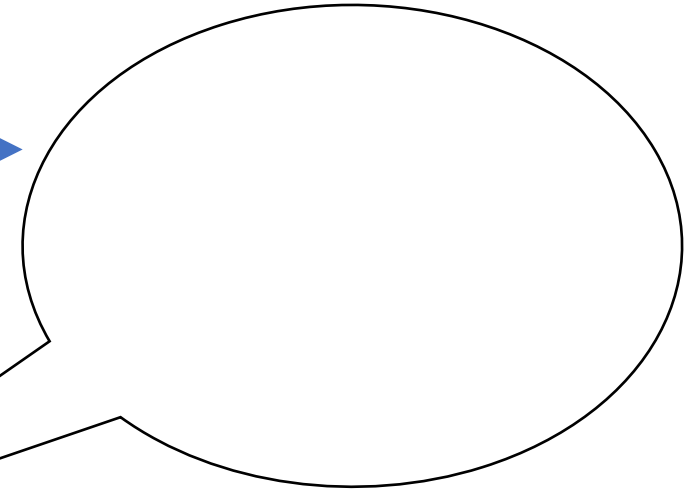




Why do we ask learners  
to SHOW THEIR WORK?

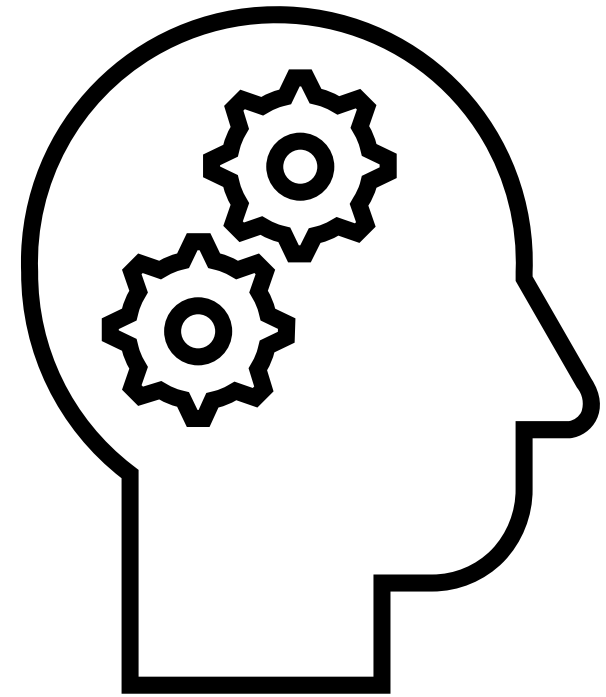


Can we communicate  
our thinking clearly?



# ***SOME* DIAGNOSTIC ERRORS**

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

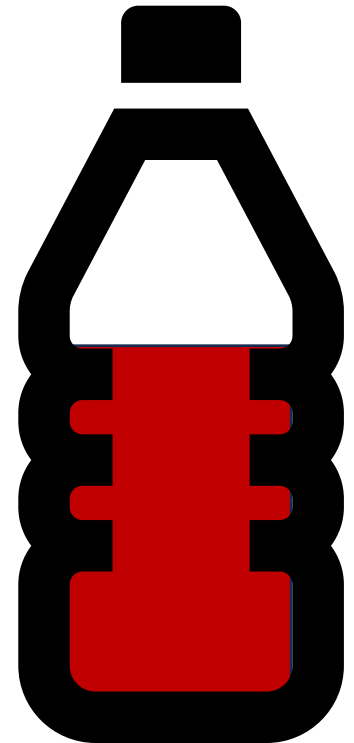


# ***SOME* DIAGNOSTIC ERRORS**

- 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

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

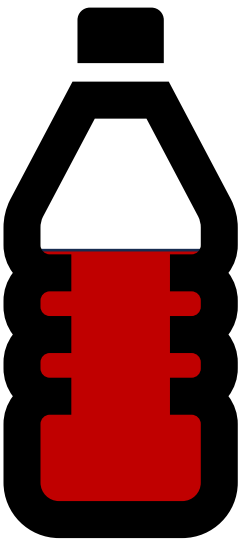
- Began coughing up blood yesterday and through the night – full of clots, bright red
- Thinks she coughed up more than a 16-oz bottle of blood, brings in a bottle that is >50% full
- Coughing has not stopped
- Had some chest pain which stopped





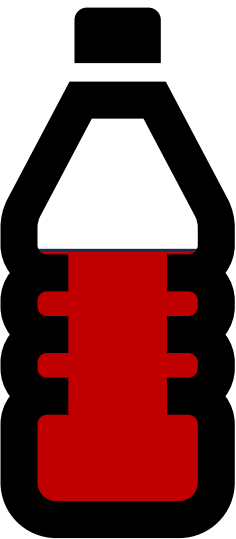
# Our story begins...

- In her usual state of excellent health until this year.
- March 2023 hemoptysis – treated for pneumonia
- November 2023 hemoptysis – CT shows “irregular nodularity in LLL/lingula”
- Treated for pneumonia again
- In between episodes, no hemoptysis



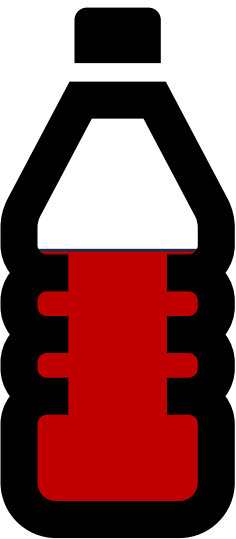
# ROS

- 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.

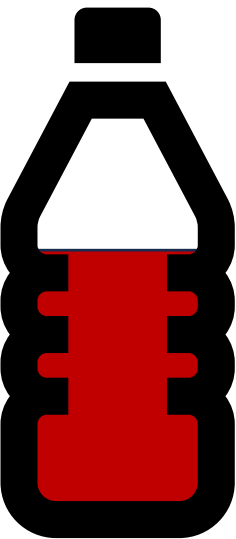
*Chest*: Linear scar over L breast, along with thicker scar corresponding to prior treatment of breast infection. Two small, circular scars under R breast (pt unsure of origin of these)

*Pulm*: CTAB, no increased work of breathing

*Abd*: Soft, non-tender, non-distended

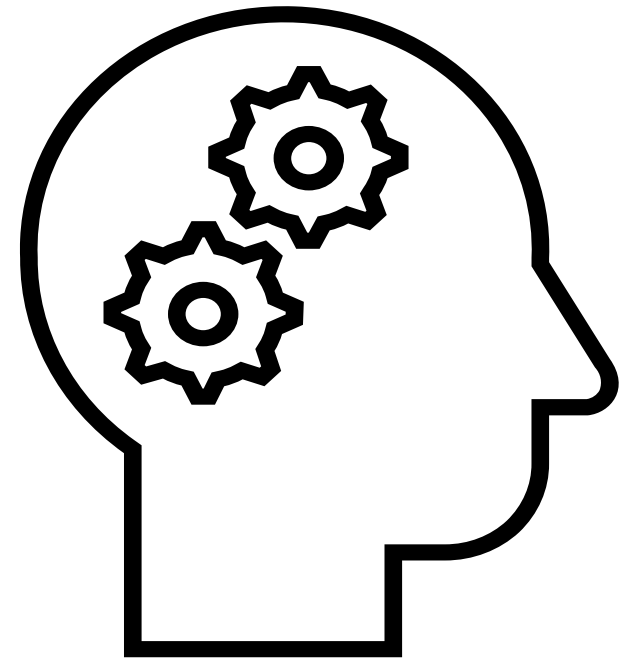
*Extremities*: No deformities

*Skin*: No erythema, no jaundice, no pallor



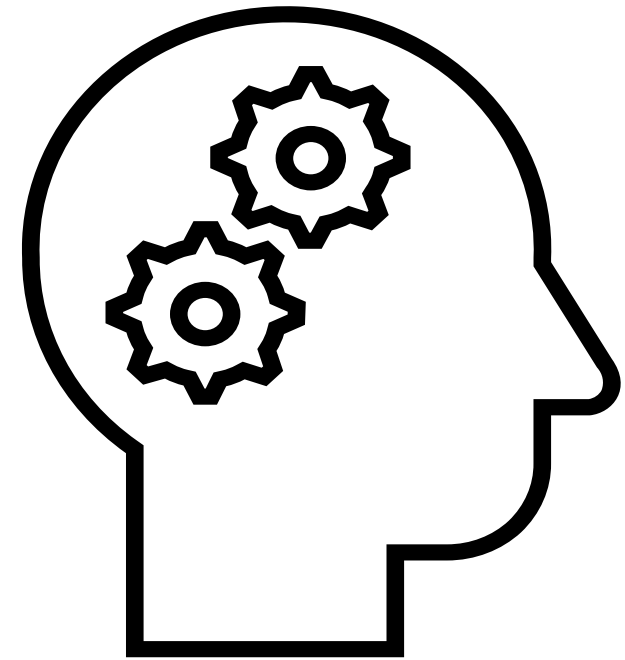
# Show your work – how does how we are thinking about the case inform what we do next? And...

- 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)



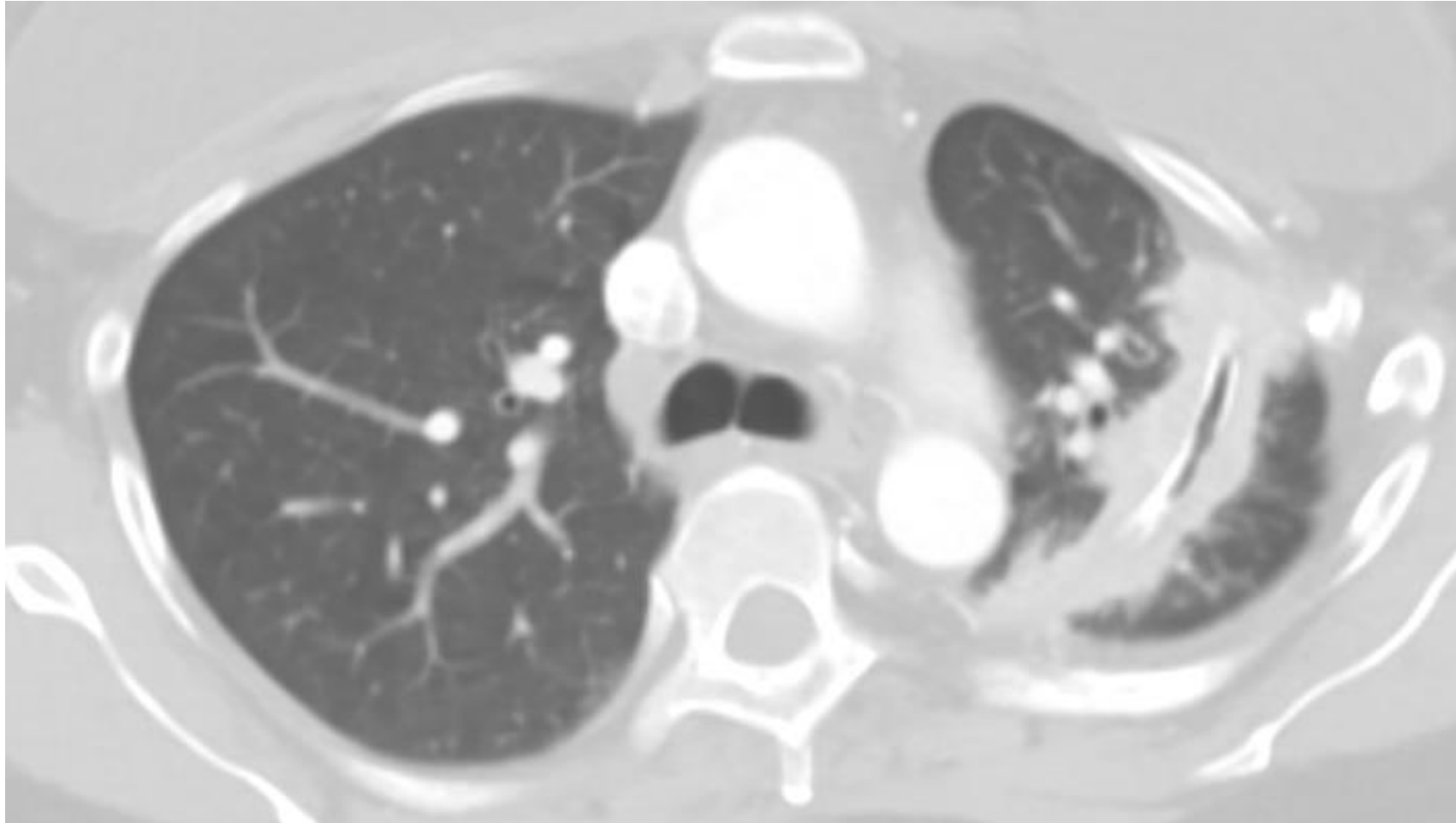
# Normal labs

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

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*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

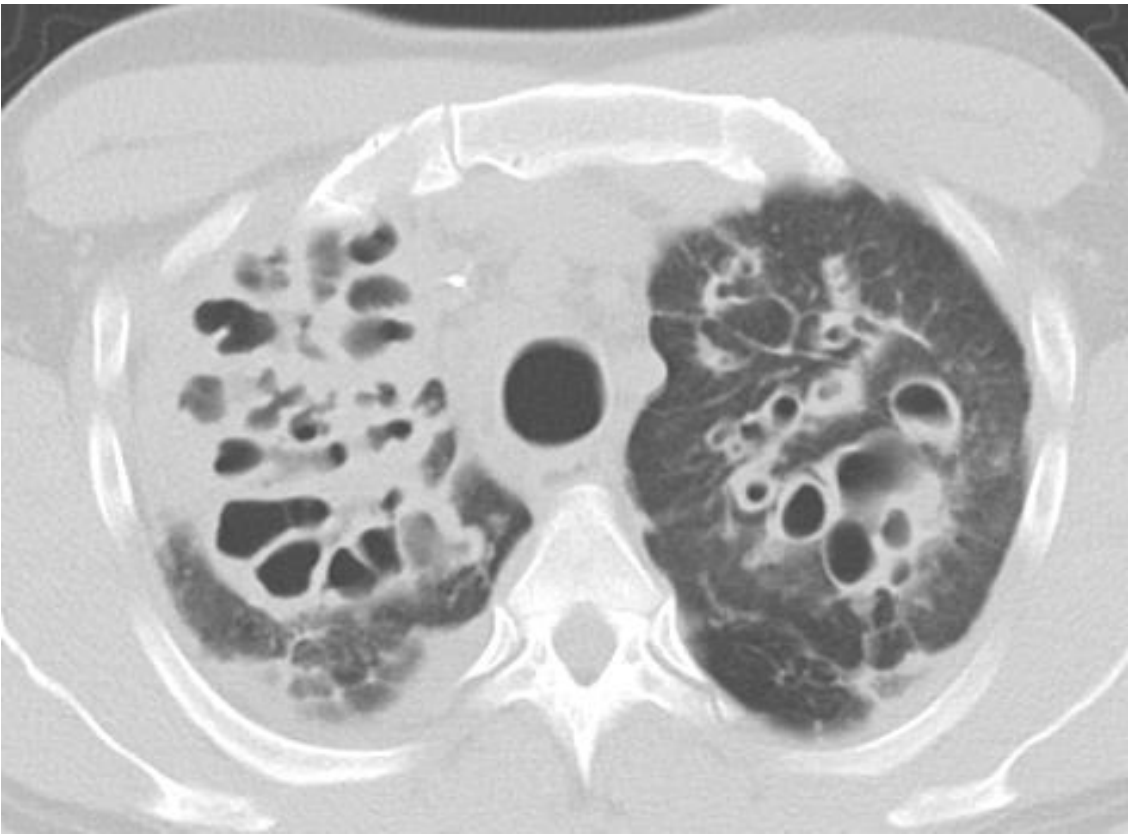


# Is the lung-bleeding focal?? Can we localize, intervene?

**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

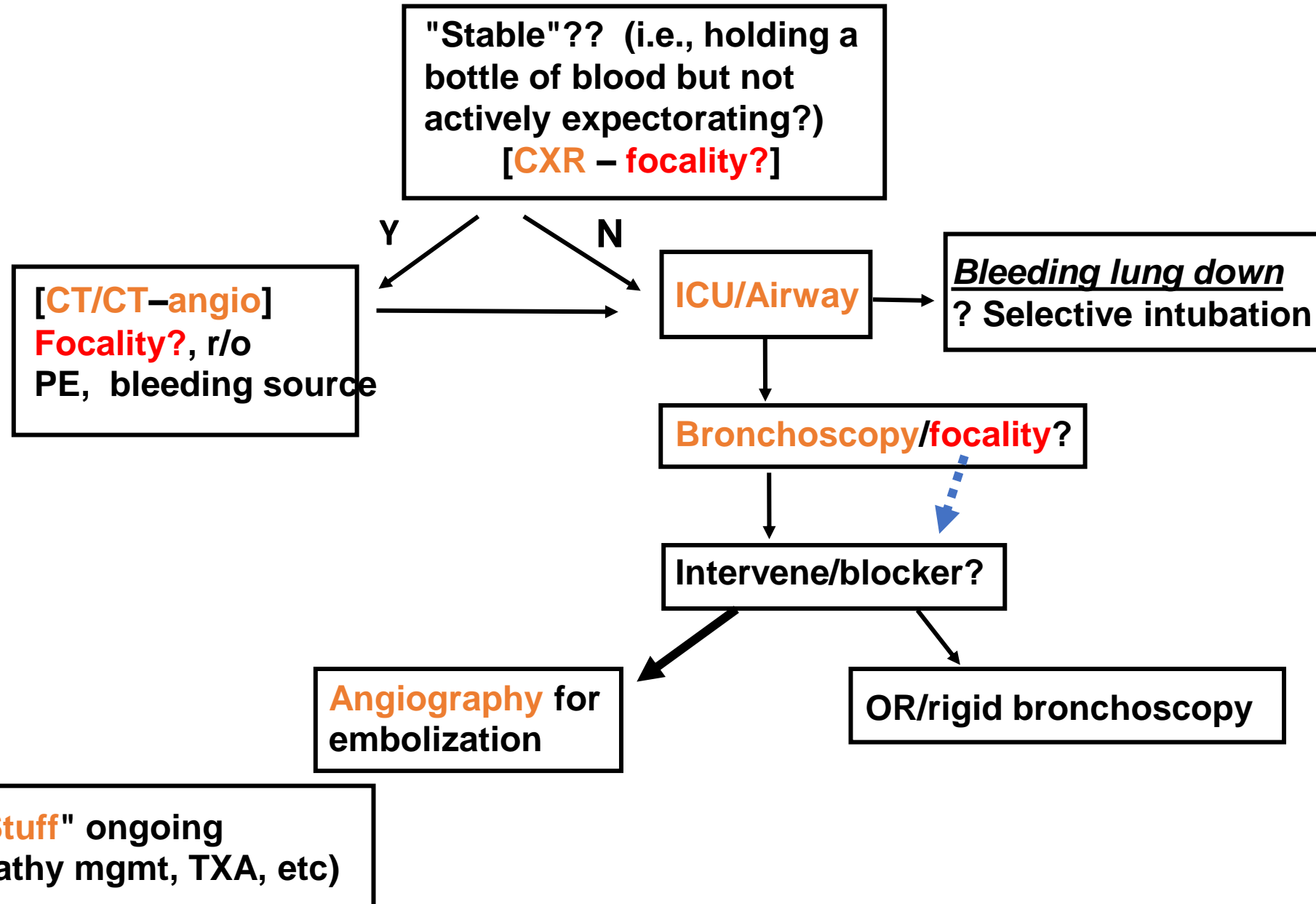
## **Cardiovascular diseases**

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

## **Bleeding disorders**

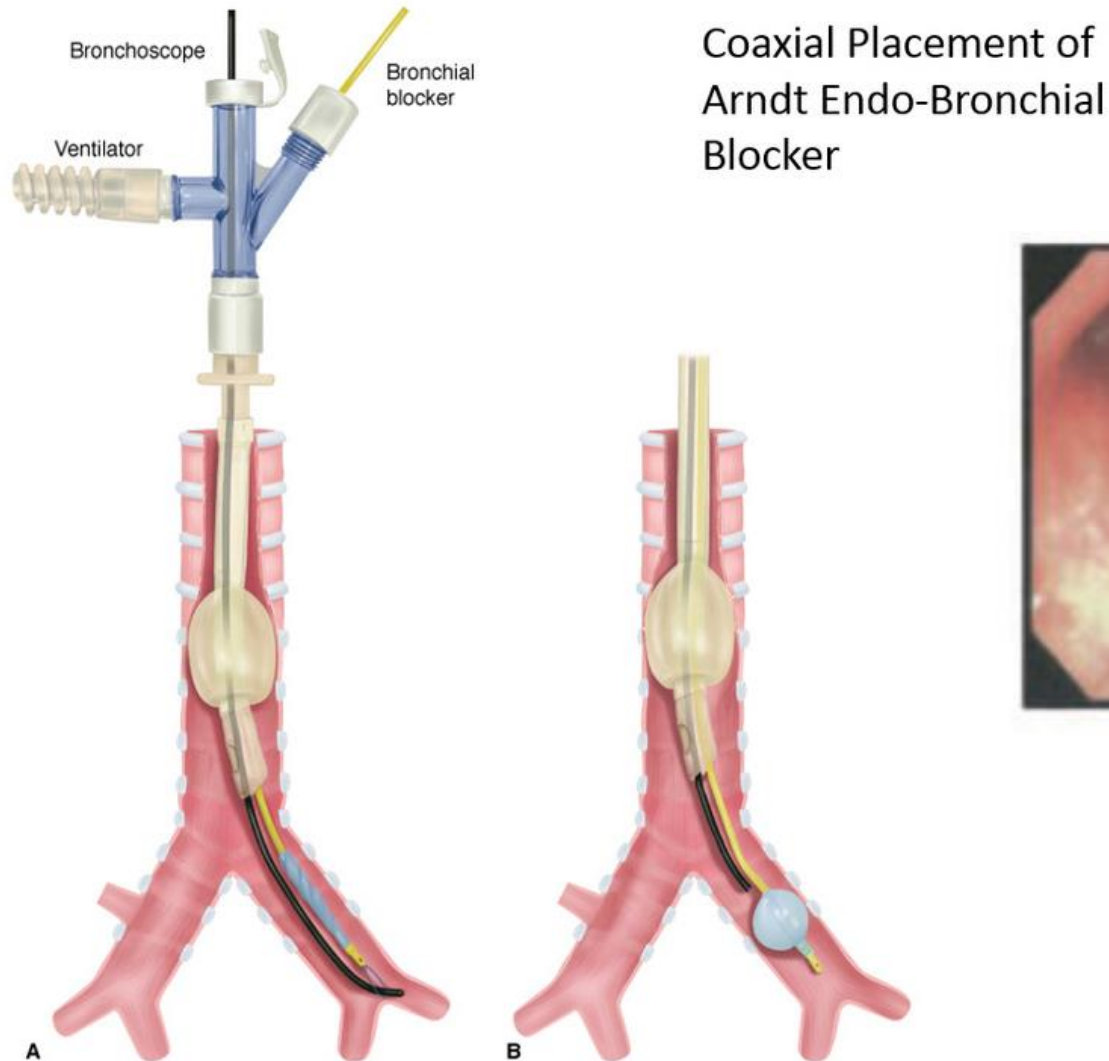
Disseminated intravascular coagulation, thrombocytopenia, von Willebrand disease, platelet dysfunction

# Massive Hemoptysis: "Do Something"





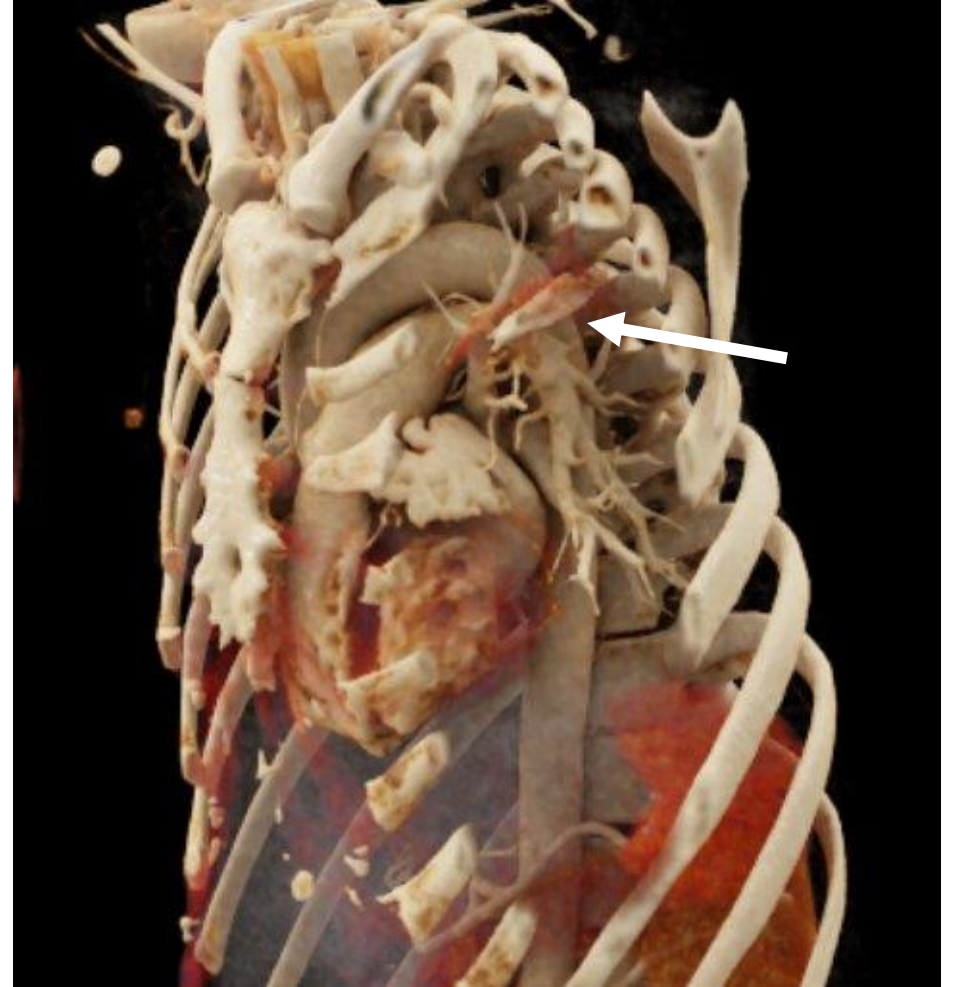
# Harrowing (or cool) times in the ICU: Isolate/Control the bleeding for focal source



**R and L mainstem bronchi**

...to avoid seeing this...

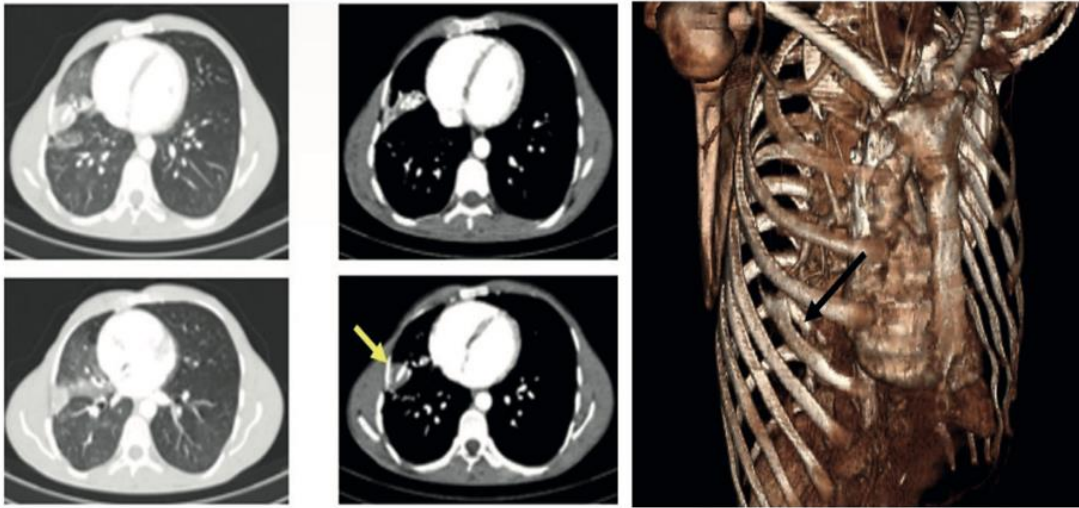
So, what on earth is going on??



# Now, what about the rib??

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

Emine Guzey<sup>1</sup>, Murat Yalcinsoy<sup>1</sup>, Muhammed Reha Celik<sup>2</sup>, Ramazan Kutlu<sup>3</sup>, Unal Akel<sup>1</sup>



**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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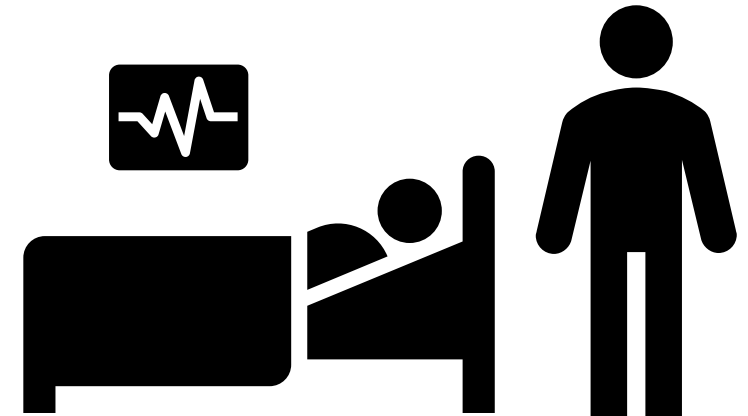
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N;ns**SURGERY**

Aksaikafijof**SURG**

No, thank you.





# Denouement

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

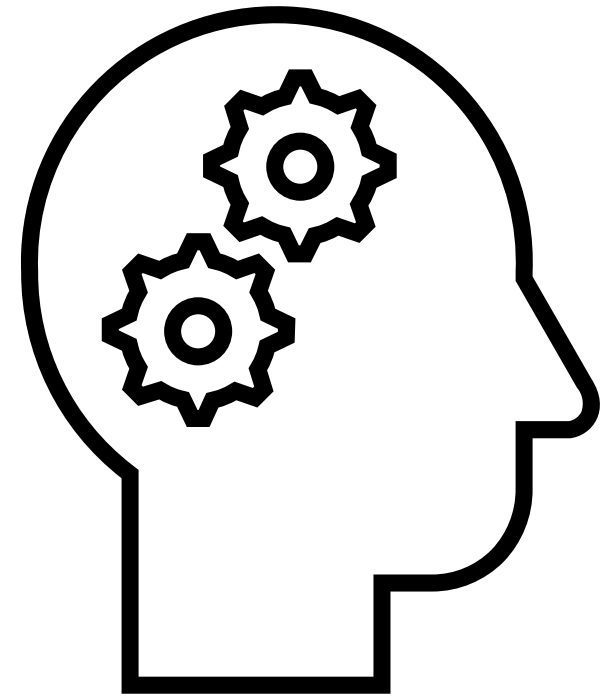
Return to OR - lobectomy. Large piece of rib pointing straight down at the main left pulmonary artery

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 not to anchor
- 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!!

