Do Lab Values hold the Key to Aspiration Pneumonia?

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DISCLOSURES

- FINANCIAL
  - I receive a salary from Shepherd Center as a full-time employee
  - No financial compensation for this presentation
- NON-FINANCIAL
  - I have no relevant non-financial disclosures

Scenario

- You receive a new evaluation of a patient arriving NPO with no history from the outside acute hospital
- Patient is alone, a poor historian
- Bedside swallow shows s/s aspiration
- Ask resident for instrumental order
- Resident responds, “well I can look at his labs and tell he’s aspirating, so just go ahead and treat him without the instrumental.”

Scenario cont'd

- Morning huddle, charge RN states bloodwork came back and the patient has elevated WBCs, CRP level, abnormal ABG
  - Medical team states these values are guiding antibiotic therapy as they continue to determine the type of infection present
- Attending asks if you think the patient is aspirating, and provides an order for instrumental
  - Thinking about the resident's comment, report in huddle
  - Come back and discuss with your immediate team: PT, OT, RD/LD
    - WHY DIDN'T WE LEARN ABOUT THIS IN SPEECH SCHOOL?!

DISCLAIMER

- Not in our scope to diagnose from lab values
  - "Review medical records to determine relevant health, medical, and pharmacological information;"
- Uphold our Code of Ethics
  - Principal of Ethics I, Rule B: *Individuals shall use every resource, including referral and/or interprofessional collaboration when appropriate, to ensure that quality service is provided.*

ASHA, 2016

Why?

- Understand the body's response to what we see during instrumental evaluation
  - Aspiration pneumonia most common hospital acquired pneumonia (HAP)
  - 1/3 post-stroke aspirators develop aspiration pneumonia
    - Hammond, 2008
- Continuing to advocate for our role in the medical aspect of our profession
  - Improve communication across professionals
- Advocating and helping our patients across the lifespan
  - Allows us to ask the right questions

  - Mills & Ashford, 2008

DEFINITIONS

- Pneumonitis – inflammation of lung tissue
  - Acute Inhalation Injuries
    - Mold
    - Chemicals
    - Ammonia
    - Formaldehyde
  - Pulmonary eosiniphilia
  - Pneumonia
- Pneumonia – inflames the lungs causing fluid buildup in the alveoli
  - Community Acquired Pneumonia (CAP)
  - Bacterial
  - HAP
    - Aspiration Pneumonia

Gorguner & Akgun, 2010
DiBardino & Wunderink, 2014

DEFINITIONS

Table 1

Aspiration: Inhalation of oropharyngeal or gastric secretions into the larynx and lower respiratory tract.
Aspiration pneumonitis: Lower respiratory tract symptoms and signs plus a history of definite or suspected aspiration event plus a radiographic infiltrate.
Aspiration pneumonia: Lower respiratory tract symptoms and signs in a patient with risk factors for aspiration as well as the presence of a radiographic infiltrate in a dependent bronchopulmonary segment.

Cavallazzi, Vasu & Marik, 2009

Aspiration Pneumonia - Pathophysiology

1. What does it do the lungs?
2. How do the lungs respond?
3. How does the body let us know something is wrong?

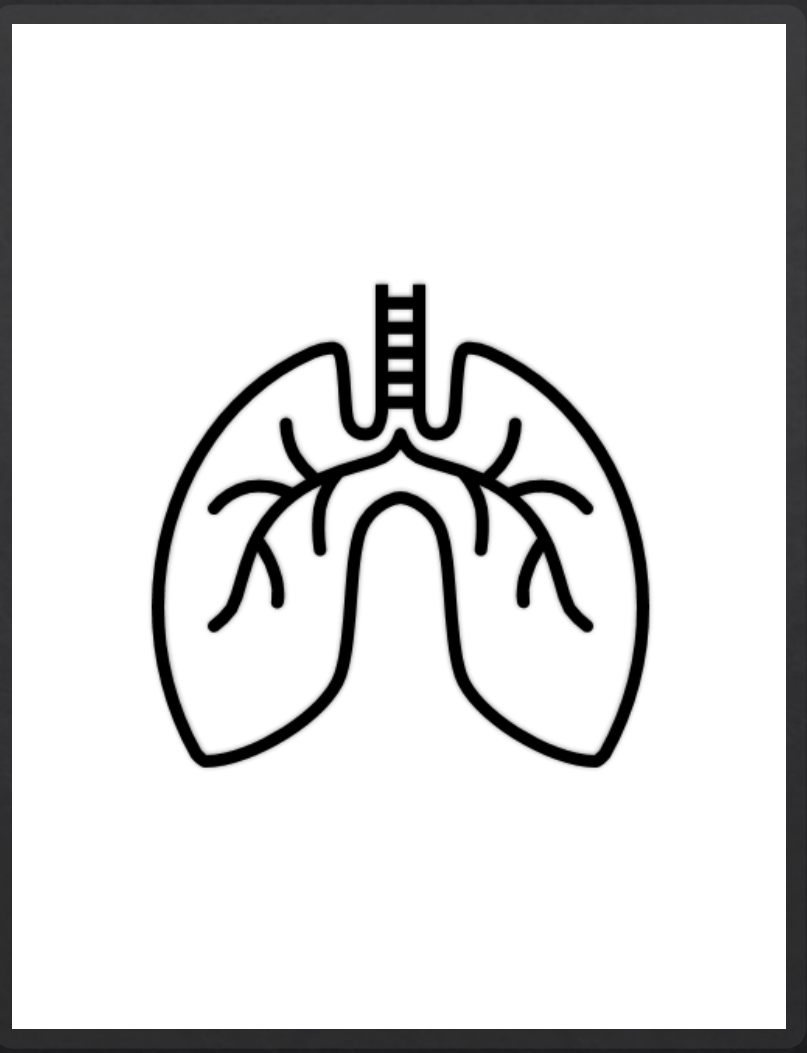
Aspiration Pneumonia - Pathophysiology

- What does it do to the lungs?
  - Pathogens colonize lower respiratory tract
  - Characteristics of pathogens effect outcome
    - pH, liquid, solid, bacterial content
- How do they respond?
  - Inflammation
    - Can also harm good tissue
  - Results in an inefficient gas exchange
- How does the body tell us?
  - S/s vary across lifespan
    - Fever
    - Malaise
    - Tachypnea
    - Cough (less common in neonates)
    - Sneeze (more common in neonates)
  - Blood work!

Simon & Collins, 2013; Ashford, 2005

LABS

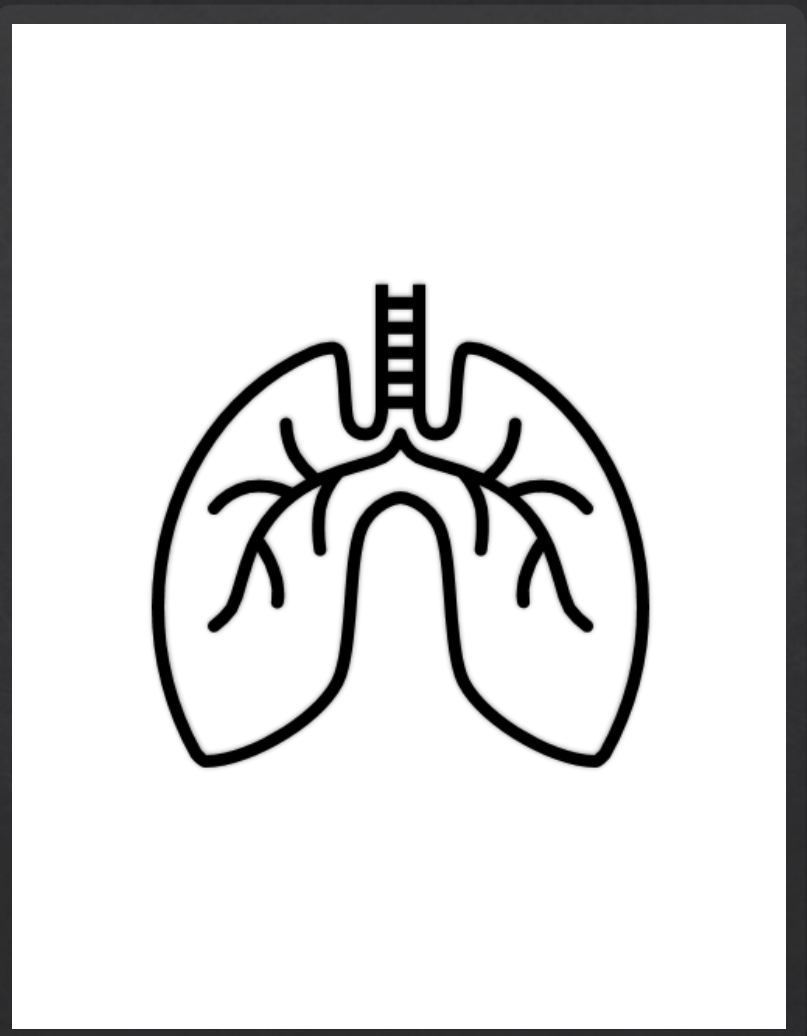
- C-Reactive Protein (CRP)
  - Immune system component
  - Monitors inflammation
  - Used with other values
  - Can indicate infection, risk of heart disease, cancer



Ridker, 2003

LABS

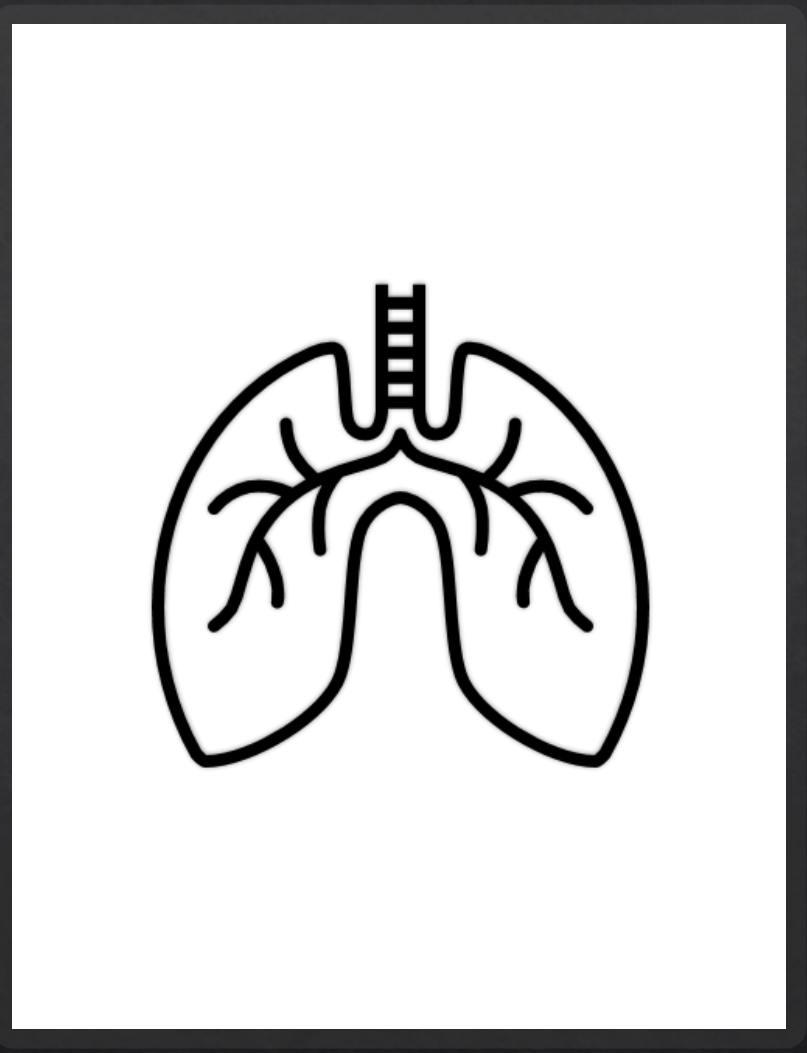
- Comprehensive Metabolic Panel (CMP)
  - 14 tests – metabolism, hydration, kidneys and liver
  - Electrolytes & hydration status
  - Electrolytes - minerals, dissolved salts
    - Sodium
    - Potassium
    - Chloride
    - Bicarbonate (Total CO2)



Mills & Ashford, 2008

LABS

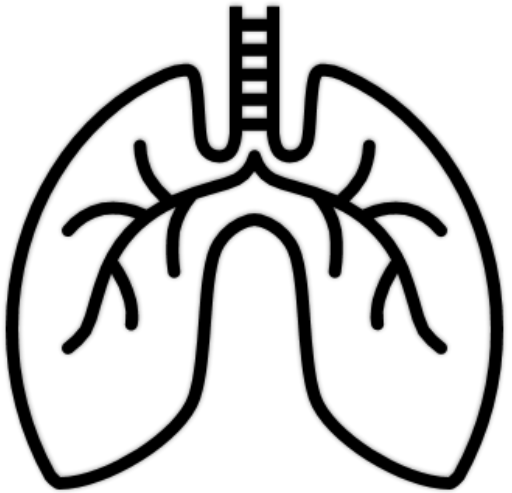
- Arterial Blood Gases (ABG)
  - Evaluates gas exchange and acid-base (pH)
    - pH, $PaCO_2$, HCO_3^-, O_2
    - Combinations: e.g. pH, $PaCO_2$
    - Can mean: Respiratory acidosis
    - But also: diabetes, renal failure



Rennis et al, 2016

LABS

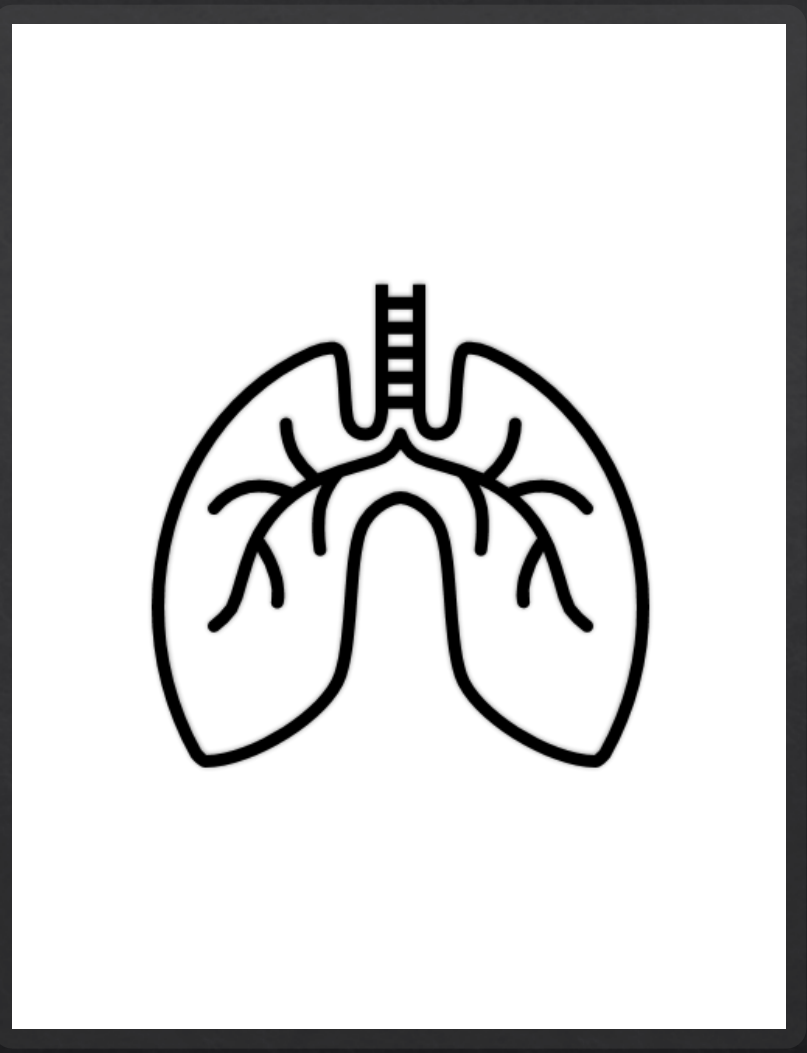
- Complete Blood Count (CBC)
  - Red blood count (RBC)
  - Platelet
  - Hematocrit (HCT)
  - Hemoglobin (Hgb)
  - White blood cell count (WBC)
    - Leukocytes



Mills & Ashford, 2008

LABS

- Leukocytes
  - Lymphocytes – create antibodies
  - Neutrophils – “bacteria fighters”
    - Expressed as the: Absolute Neutrophil Count (ANC)
    - Neutropenia – low count
    - Neutrophilia – high count
  - Basophiles – secrete histamine
  - Eosinophils – can help with allergic responses
  - Monocytes – break down bacteria



Mills & Ashford, 2008

Do lab values hold the key?

- Answer should be "I don't know"
  - WHY? We need more information than just labs
  - Lab values have multiple meanings
  - Added puzzle pieces to help you practice and understand illness
  - Collaborate with RD/LD

Sheffler, 2015

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