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Case Presentations & Medical School

Digestive System
Circulatory System
Medical School

Michael Smith

BSc, UBC MD Class of 2026
Island Medical Program

May 23, 2023
10:00 AM – 2:00 PM

THE UNIVERSITY OF BRITISH COLUMBIA
Faculty of Medicine

University of Victoria

let's talk science

About Me

Intro and Medical School

Hello! I'm Michael Smith, a 1st year medical student from UBC's Island Medical Program.

I'm from White Rock, BC, went to Earl Marriott Secondary (Class of 2016) and UBC Vancouver (Class of 2020, BSc Major in Pharmacology).

Medical School:

I started medical school in August 2022 and will graduate in 2026. I am happy to answer to any questions you may have at the end of this lecture where I will talk a bit about my journey and what I wish I knew when I was your age!

My Why:

Territorial Acknowledgement

I would like to begin by acknowledging that I am joining you from the unceded territory of the Kumeyaay nation. The Kumeyaay people continue to maintain their political sovereignty and cultural traditions as vital members of the San Diego Community. I am grateful for the opportunity to work, live, and play on their lands.

I also acknowledge the audience joins from the unceded territory of the lək̓ʷəŋən (Lekwungen) speaking peoples, including the Songhees, Esquimalt, and W̱SÁNEĆ (hwha - say - netch) peoples whose historical relationships with the land continue to this day.

Disclosure

I am a first year medical student. While some clinical information will be presented in this presentation, these talks do not constitute or substitute for medical advice. Please consult with a healthcare provider if you or others you know have any personal health-related concerns.

Todays Agenda

Case Presentations and Medical School

Digestive System

Circulatory System

Medical School

Let’s get started!

Todays Agenda

Case Presentations and Medical School

- **Digestive System**
- **Circulatory System**
- **Medical School**

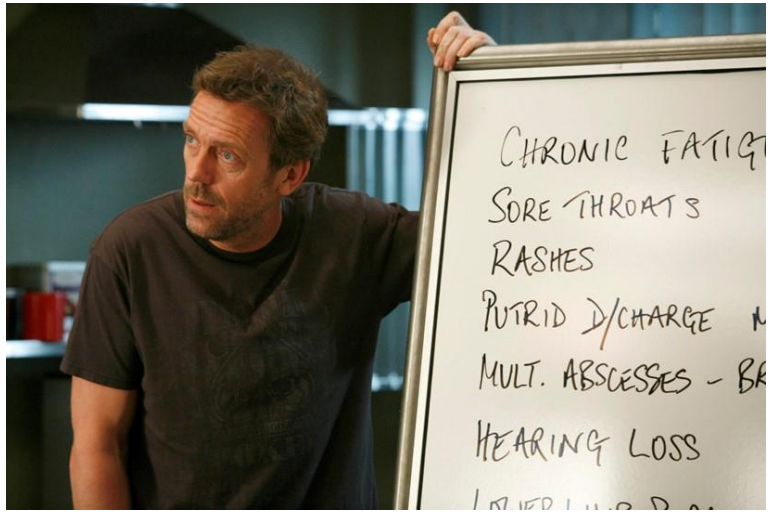
- You are a medical student in pre-clerkship (1st/2nd year) and you are doing your weekly shadowing in a local family practice clinic in Victoria. You are asked to meet the next patient alone and take a history.
- A 50-year-old teacher identifying as male presents to the clinic. They appear well and have normal vitals as taken when they first arrived (always important to establish ABCs). After establishing a rapport with the patient, you identify his chief complaint: a burning sensation in his chest.

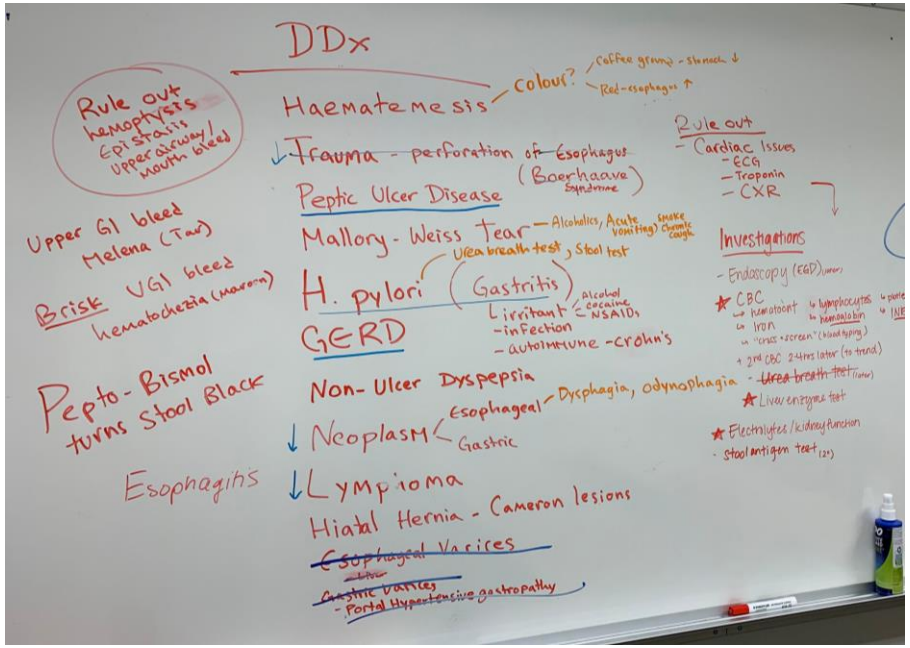
Chief Complaint:

- : concise statement in English or other natural language of the symptoms that caused a patient to seek medical care (Wagner & Hogan, 2006)
- Allows us to begin to form a Differential Diagnosis (DDx)

Differential Diagnosis (DDx):

- : a systematic process used to identify the proper diagnosis from a set of possible competing diagnoses (Cook & Decary, 2020)
- **Now your turn to try it!**





1. What do you think is the cause of this patient's issues? (Differential Diagnosis). Write your suggestions on Sli.do -
CC: burning pain in chest

Some hints:

- Start with localization. Where could the issue be originating from? What lies in that area?
- Do a systems approach. What are the bodies systems (respiratory, cardiac, gastrointestinal, etc.) relevant to the location and symptoms?

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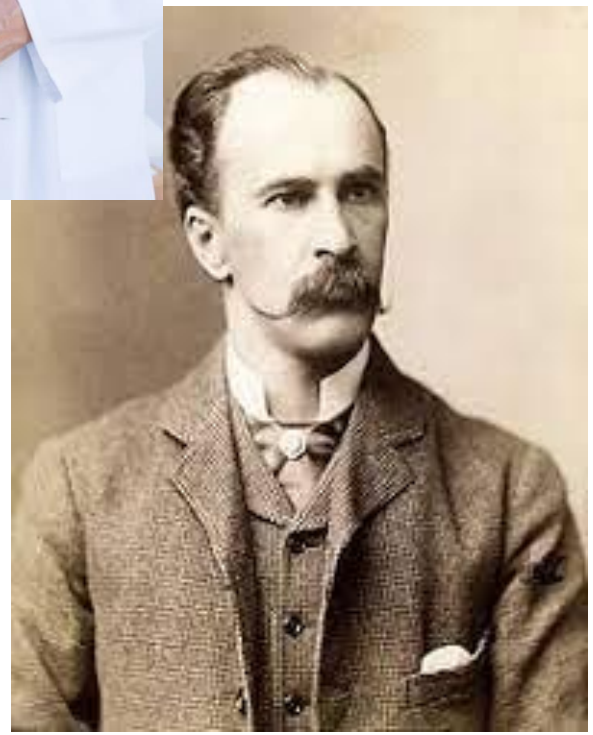
History

- Allows us to differentiate between the different possible diagnoses
- **Most important first step in non-emergent cases**
- Informs the need for further investigations (physical exams, laboratory tests, imaging, etc.)

- **“Listen to your patient; they are telling you the diagnosis.” – Sir William Osler**



Our Patient's History

HPI – History of Presenting Illness
Systematic Process: WWQQAA

- **When**: after eating and especially at night, and for the past few weeks
- **Where**: behind his sternum, radiates up towards the throat
- **Quality**: burning pain
- **Quantity**: 5/10 at its worst
- **Aggravating**: after eating and at night
- **Alleviating**: improves in between meals and by sitting with his head up
- **Associated Symptoms:** "tummy aches" in the abdomen and belching

2. What do you think is the most likely cause now? Rank the following options on Sli.do:

- Myocardial Infarction (Heart Attack)
- Reflux Disease (GERD)
- Pulmonary Embolism
- Peptic Ulcer Disease

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2. What do you think is the most likely cause now? Rank the following options on Sli.do:

- Myocardial Infarction (Heart Attack)
- **Reflux Disease (GERD)**
- Pulmonary Embolism
- Peptic Ulcer Disease

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Gastroesophageal Reflux Disease (GERD):

Pathophysiology:

- Regurgitation of gastric contents backwards into the esophagus, causing irritation and inflammation of the esophagus

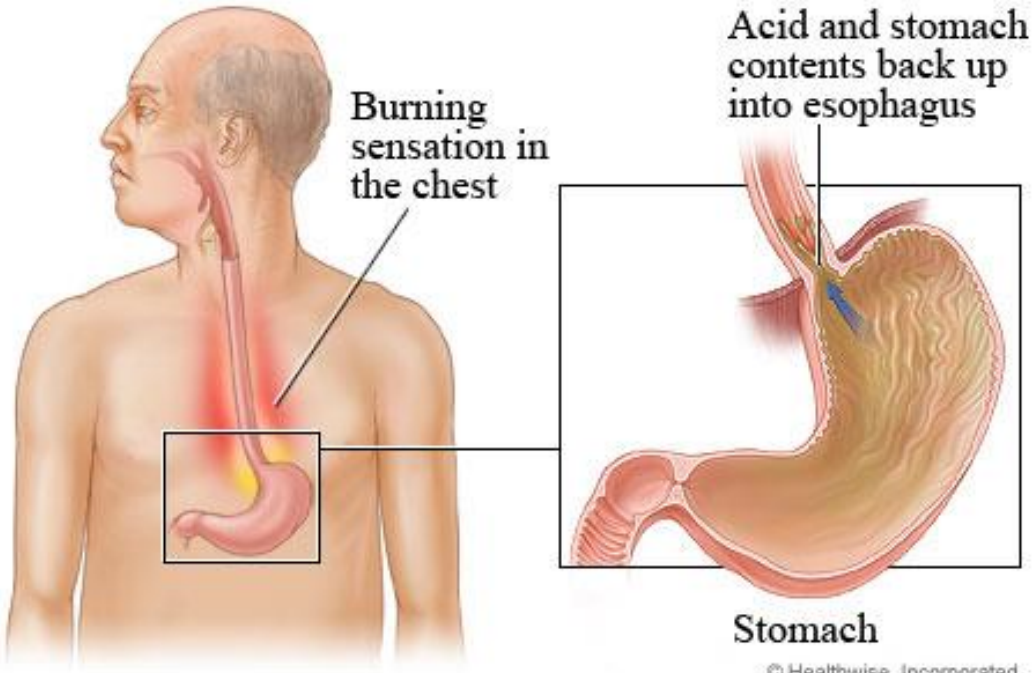
Causes:

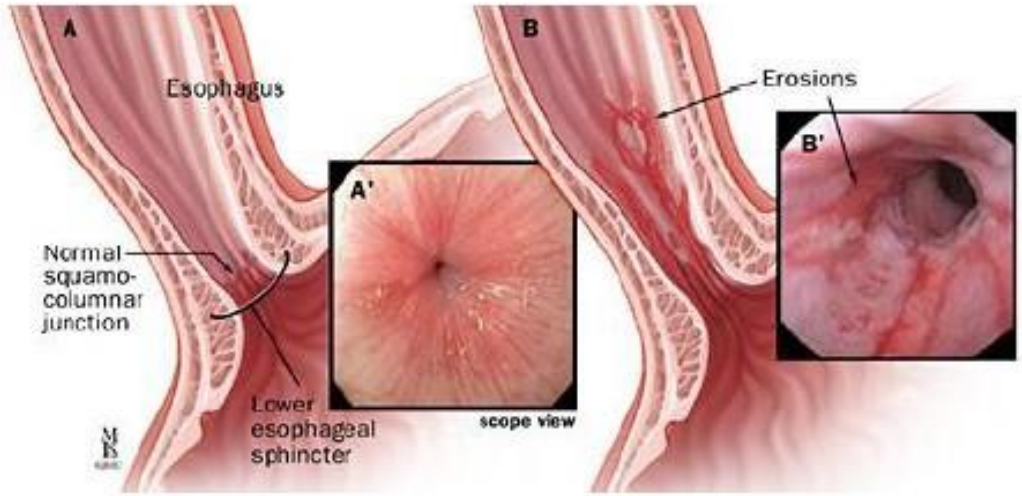
- low resting tone in LES, delayed gastric emptying, inc. abdominal pressure, inc. acid production

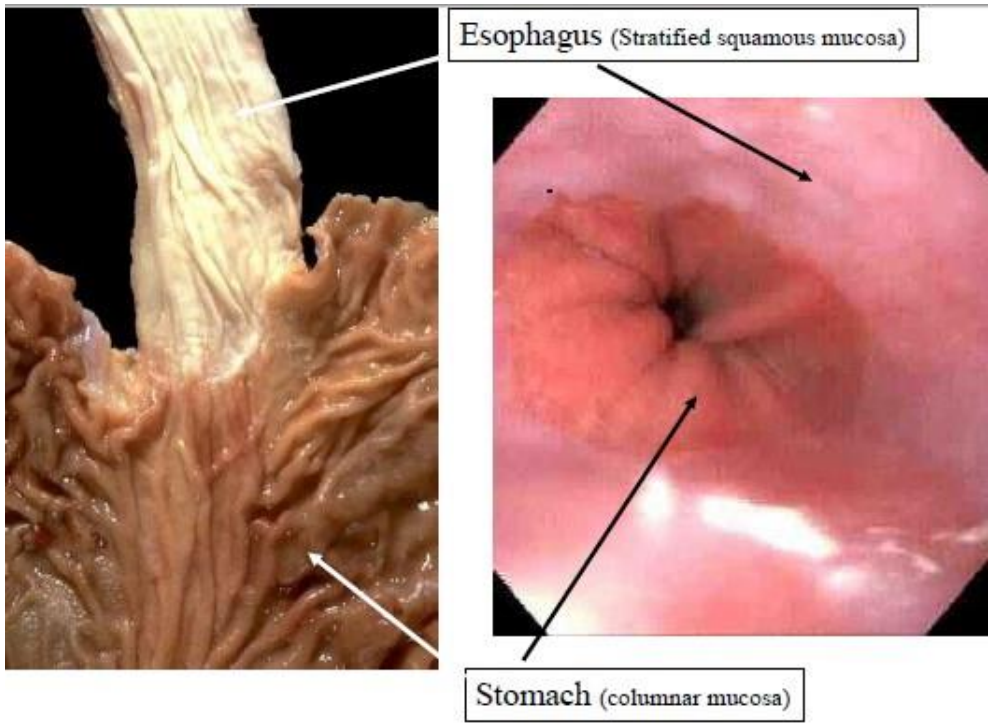
Prevalence: common, ~20% in adults,

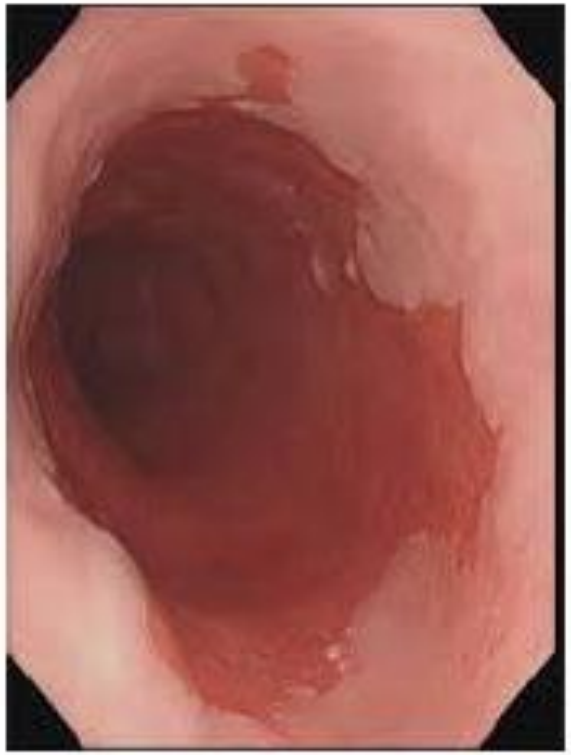
Complications:

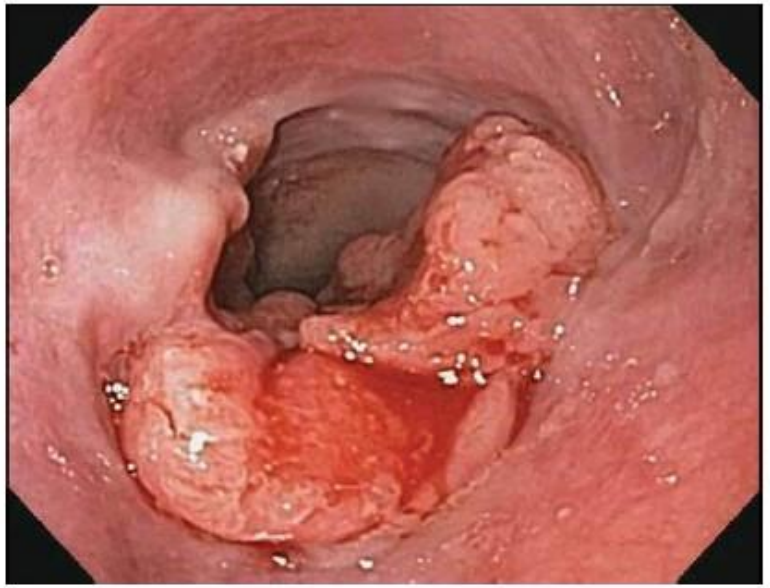
- Esophageal scarring, bleeding, cellular dysplasia, adenocarcinoma






Esophagus (Stratified squamous mucosa)
Stomach (columnar mucosa)





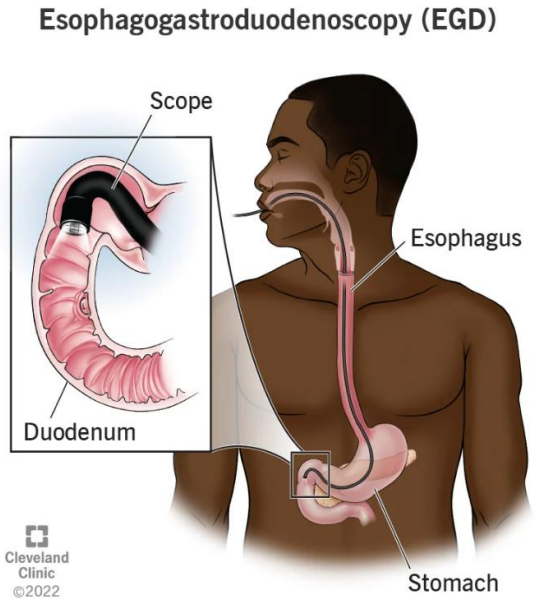
Diagnosis and Tests

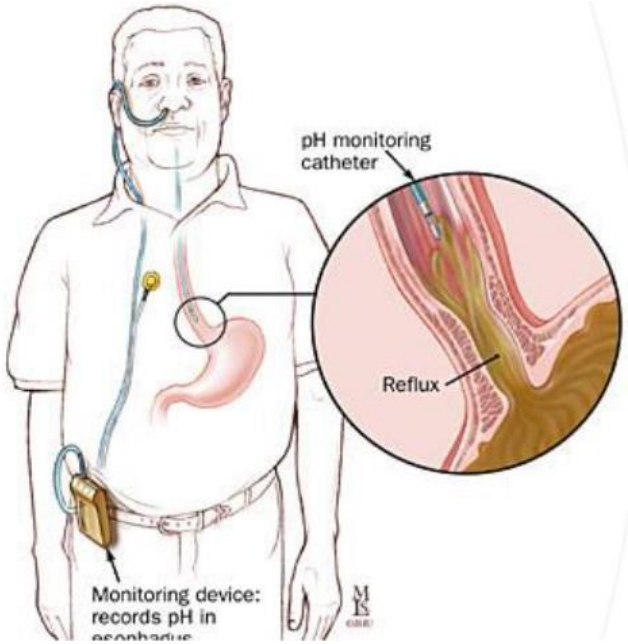
DDx:

- Cardiac: angina, MI, aortic dissection,
- Pulmonary: pulmonary embolism
- Gastrointestinal: GERD, esophagitis, hiatal hernia, peptic ulcer disease

Confirming Diagnosis/Tests:

- History and Relief with Medication
- Other Tests if Alarm Features
  - EGD
  - Esophageal pH monitoring
  - Esophageal manometry
  - Barium swallow

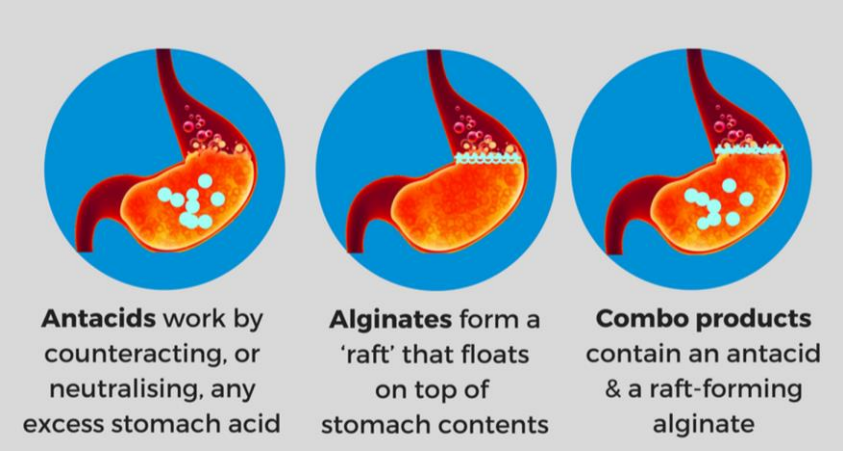


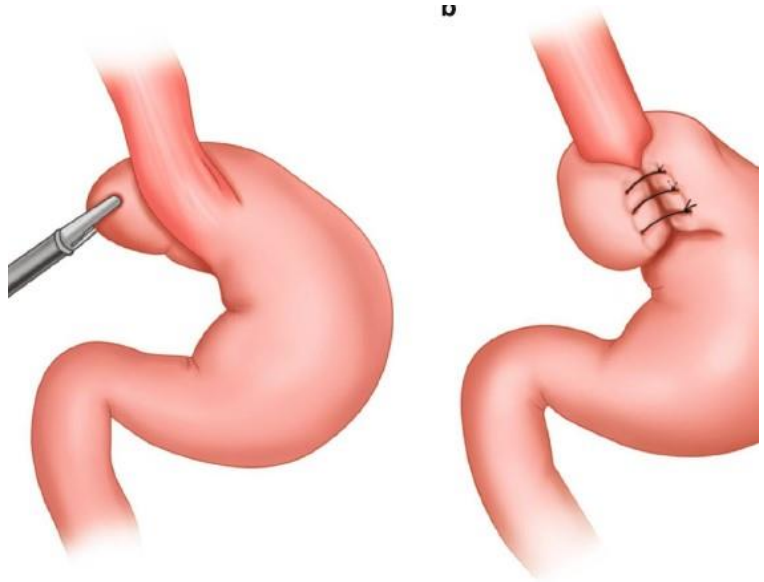


Treatment

First Line:
- PPI (decrease acid production)
- Antacids
- H2 Blockers
- Diet modification
- Weight loss

Other Possibilities:
- Surgery – Fundoplication





Todays Agenda

Case Presentations and Medical School

- Digestive System
- Circulatory System
- Medical School

- You are a clerk (3rd/4th year medical student) doing your 4 week rotation in the emergency room where you work and see patients. This is called clerkship.

- A 4-week-old male infant presents to the emergency department with the mother reporting the baby has been feeding poorly.

3. What do you think is the cause of this patient's issues? (Differential Diagnosis). Write your suggestions on Sli.do -
CC: baby feeding poorly

Some hints:

- Important to remember that not all causes of problems are endogenous (within the body)
- How certain can we be about a possible diagnosis? Very likely we need more information, but good to start thinking of possible options.

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Our Patient's History

When - past couple of weeks, pregnancy was unremarkable, no abnormalities noted
Associated Symptoms: rapid breathing (tachypnea), bluish colour of skin during feeding

Sometimes things don't fit the WWQQAA mold, but it's still important to ask more questions and do a physical exam when the patient can't answer you.

Physical Exam

Most important next step
Systematic Approach:

- **General Wellness** - sick / stable
- **Vital Signs:** HR - elevated, RR - elevated, BP - low diastole
- **Infant** - Percentile Growth Charts (10%)
- **Respiratory Exam** = breath sounds
  - Crackles at the bases of both lungs
- **Cardiac Exam** = S1/S2 heart sounds
  - Presence of a murmur present in systole and diastole, plus an S3
  - Normal blood flow to all extremities

4. What do you think is the most likely cause now? Think about the following options:

- Improper Latching / Feeding
- Illness / Infections
- Respiratory Issues
- Cardiovascular Issues

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4. What do you think is the most likely cause now? Think about the following options:

- Improper Latching / Feeding
- Illness / Infections
- Respiratory Issues
- **Cardiovascular Issues**

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Patent Ductus Arteriosus (PDA):

Pathophysiology:

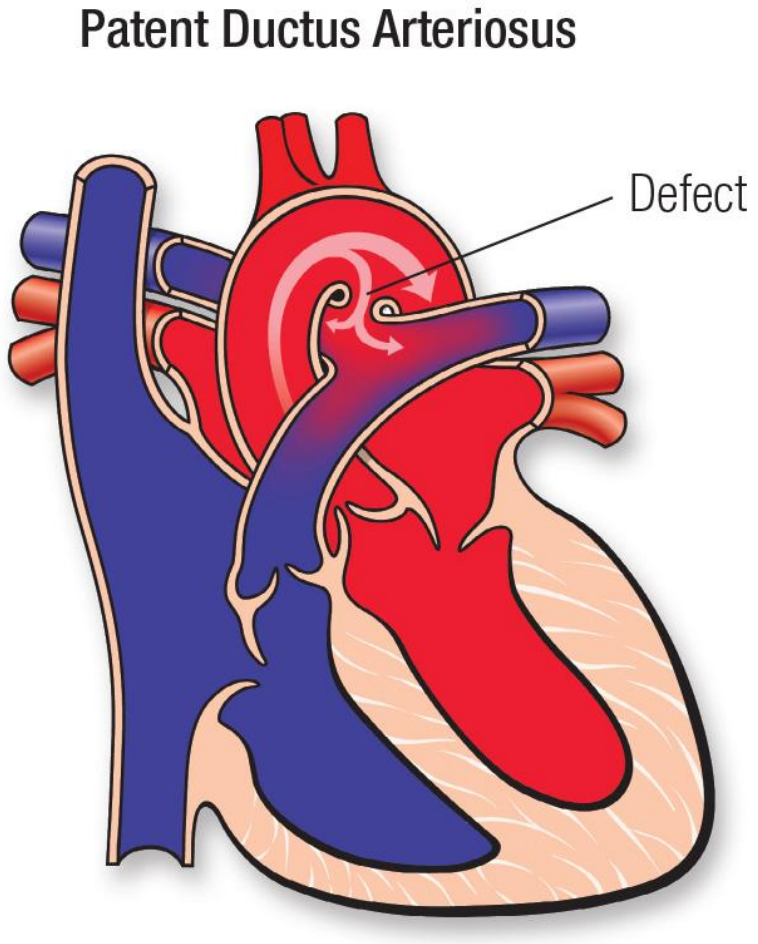
- Form of Congenital Heart Disease: Failure of closure of ductus arteriosus
- allows some O2 blood to flow Aorta -> Pulmonary Artery to Lungs
- Left side of heart has to pump harder

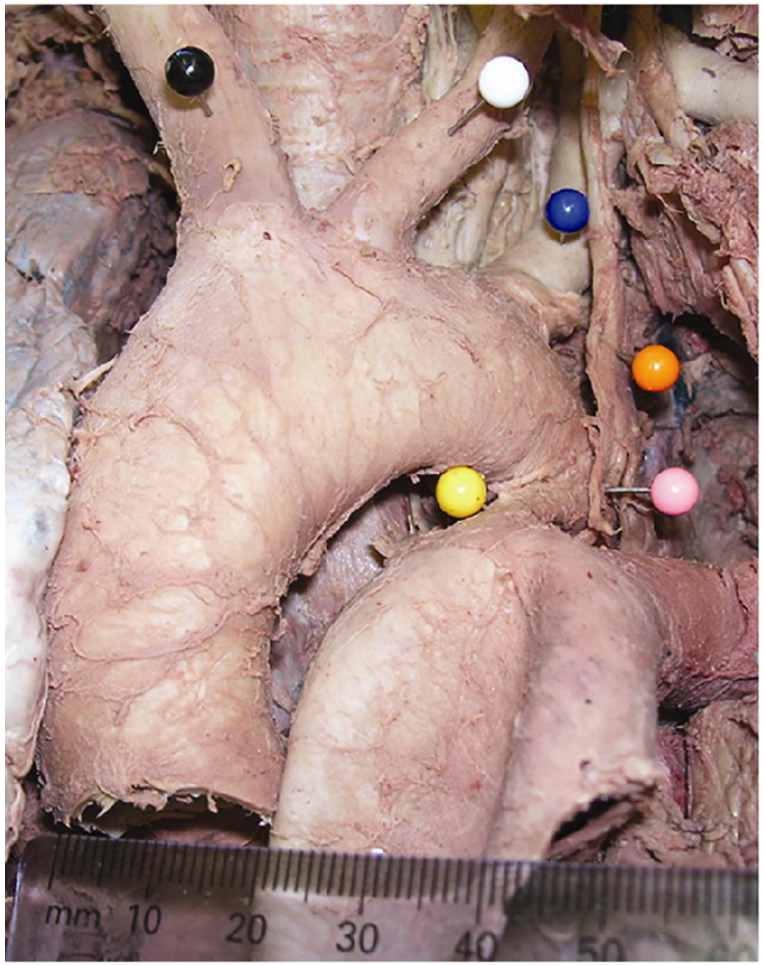
Cause: Multifactorial / PreTerm Birth

Prevalence: 8% of CHD (~1/100 births)

Complications:

- Size determines impact
- Pulmonary Edema, Heart Failure, Kidney Failure, Eisenmenger Syndrome

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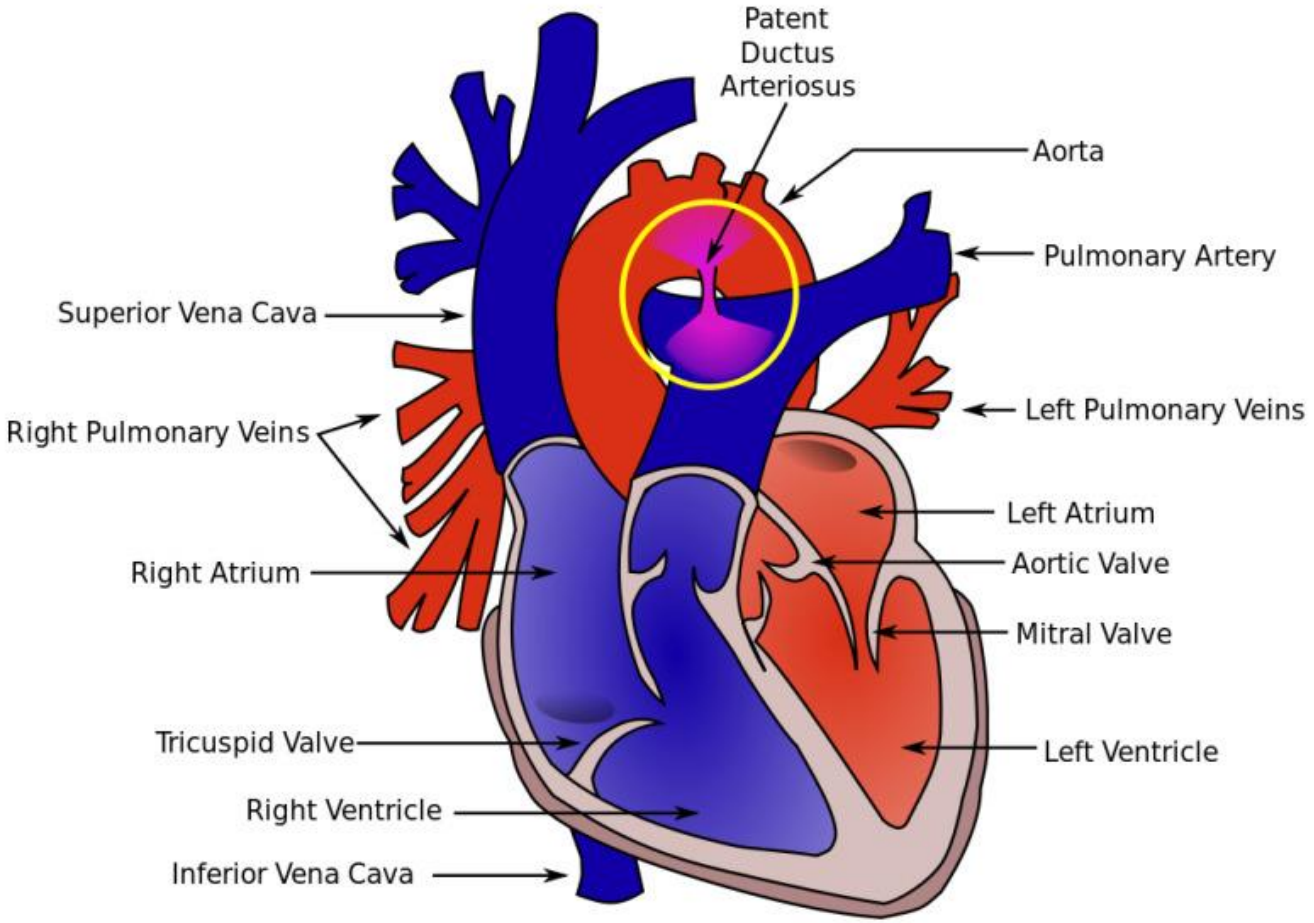

Patent Ductus Arteriosus
Aorta
Pulmonary Artery
Superior Vena Cava
Left Pulmonary Veins
Right Pulmonary Veins
Left Atrium
Right Atrium
Aortic Valve
Mitral Valve
Tricuspid Valve
Left Ventricle
Right Ventricle
Inferior Vena Cava

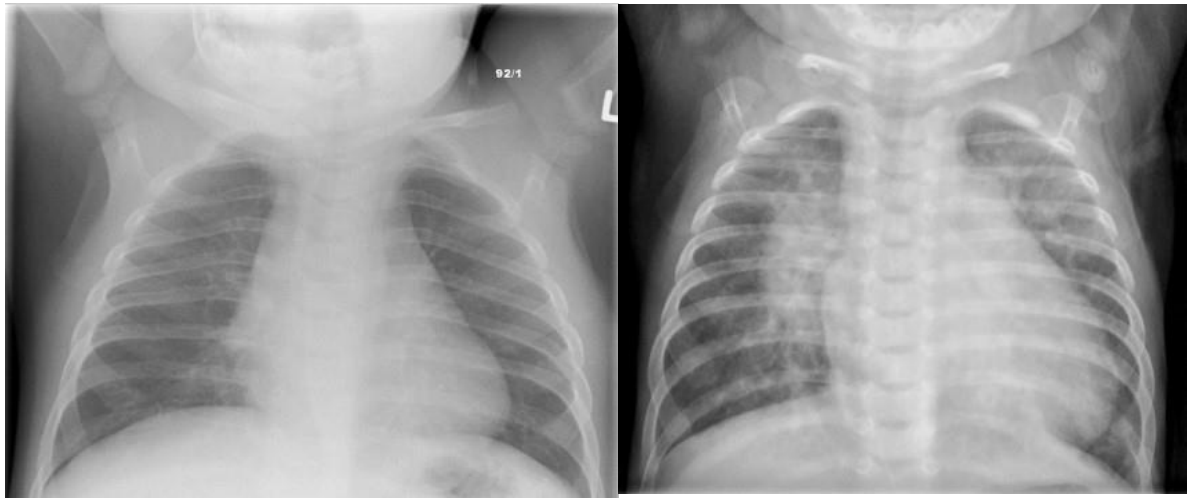
Diagnosis and Tests

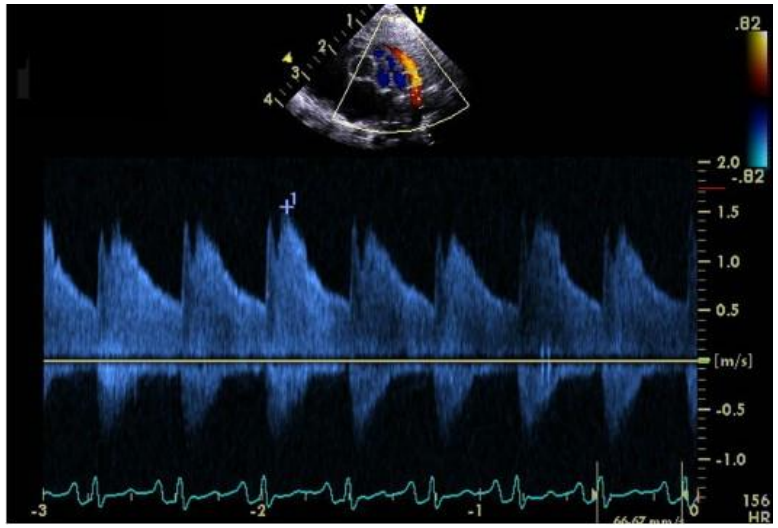
DDx:

- Improper Latch / Feeding
- Poor nutrition – poverty, neglect, etc.
- Respiratory Issues (Pneumonia)
- Other Illness / Infections
- Congenital Heart Disease
  - Cyanotic vs Acyanotic
  - Simple vs Complex

Confirming Diagnosis/Tests:

- Physical Exam
- CXR, ECG, Blood Work
- Confirmation of Diagnosis: ECHO
  - Echocardiogram





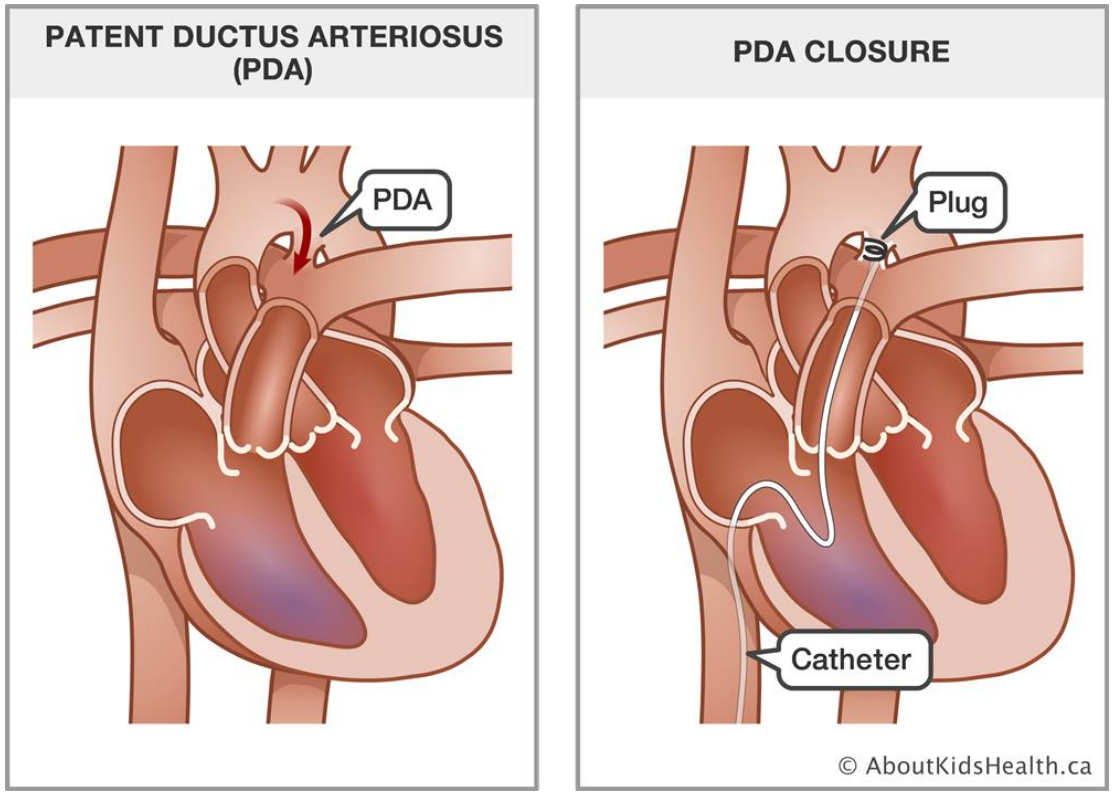
Treatment

Initial Treatment

- NSAID (Indomethacin, preterm birth only)
- Diuretics (furosemide) = manage volume overload
- Nutritional Optimization

6 Month Surgical Fix:

- Surgery – Cardiac Catheterization
- Success rate = 99%
- Long term success!



Summary of Cases

Patient Evaluation:

- Chief Complaint
- History of Presenting Illness
- Complete Patient History
- Physical Exam
- Laboratory Tests/Imaging/Other

Gastroesophageal Reflux Disease (GERD)
Patent Ductus Arteriosus (PDA)

References

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Todays Agenda

Case Presentations and Medical School

- Digestive System
- Circulatory System
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MEDICAL SCHOOL

Medical School!

Earl Marriott Secondary (Class of 2016)
UBC Vancouver (Class of 2020, BSc Major in Pharmacology)

Wrote MCAT in Summer 2020

Applied to UBC, Western, and McMaster for 2021 cycle. Interviewed and accepted to UBC, deferred to start in 2022.

I'll do my best to answer any of your application questions, but the UBC website is the best resource (https://mdprogram.med.ubc.ca/admissions/before-you-apply/). Other sources for MCAT, etc.

Thank you!

Any Questions?

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