

Run the List Handouts

Updated after every organ block is completed



RUN THE LIST

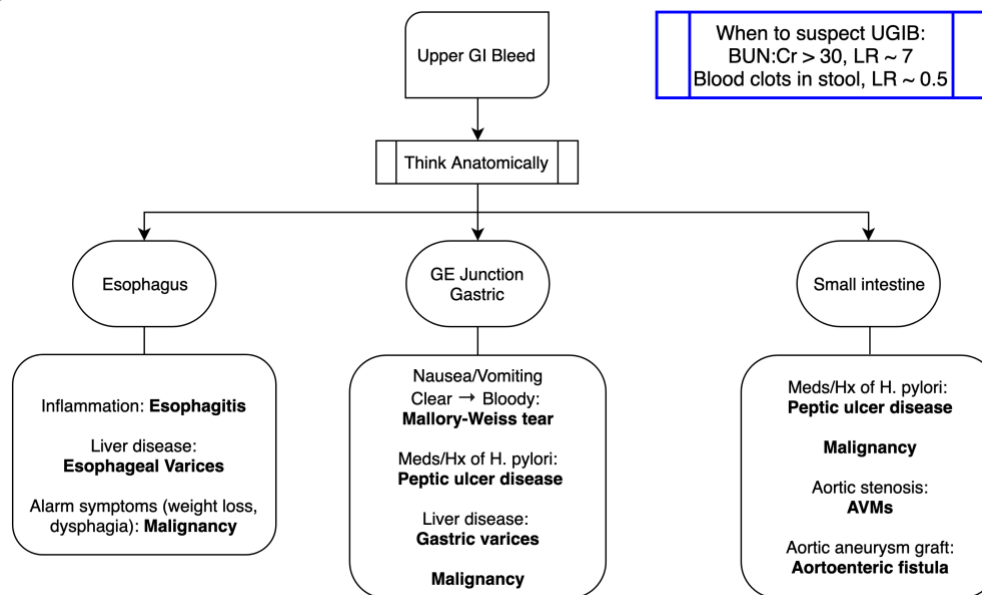


RUN THE LIST

Non-Variceal Upper GI Bleed

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Navin Kumar



1. Initial Steps:

- Is the Patient Stable? → triage
 - Vital signs (blood pressure, heart rate)
 - Tachycardic at rest: **<15% blood volume loss**
 - + Orthostatic = systolic ↓ by 20 mmHg or diastolic ↓ 10 mmHg upon standing: **> 15% blood volume loss**
 - Hypotension at rest: **> 40% blood volume loss**
- Resuscitation
- Medications to consider holding:
 - aspirin, anti-platelets, anti-coagulants
 - Consider need for reversing anticoagulation

2. Management

- **Resuscitation!**
 - Access: 2 large-bore peripheral IV → Fluids
 - Transfusion threshold: **Hg < 7 g/dL** better than Hg < 9 g/dL. Except: *exsanguination, known cardiovascular or cerebrovascular disease. Why?*
 - Dilution of clotting factors
 - Worsen portal hypertension
 - Want to keep splanchnic vasoconstriction!
- **Proton pump inhibitor, IV BID:** want a gastric pH > 6 to facilitate clot formation
- **Erythromycin:** promotes gastric emptying via motilin-like properties → good endoscopic views (administer 30-60 minutes prior to EGD; can use metoclopramide as alternative)
- **Endoscopy:**
 - Variceal: within 12 hours
 - Non-Variceal: within 24 hours, too soon (3-4h) can be bad (NVUGIB needs to be well resuscitated and medically managed!)

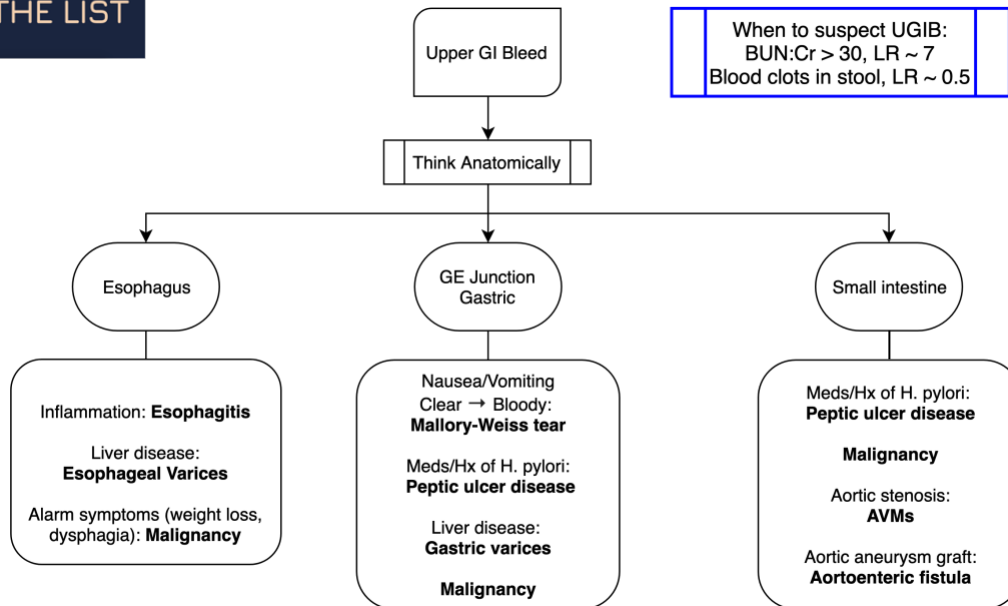


RUN THE LIST

Variceal Upper GI Bleed

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Navin Kumar



1. Initial steps: if any history suspicious for portal HTN, consider variceal until proven otherwise

- Is the patient stable → resuscitate!
 - Vitals, orthostatics, ABCs
 - Protect airway if active hematemesis prior to EGD
- Medications to consider holding:
 - aspirin, anti-platelets, anti-coagulants
 - Consider need for reversing anticoagulation

2. Management

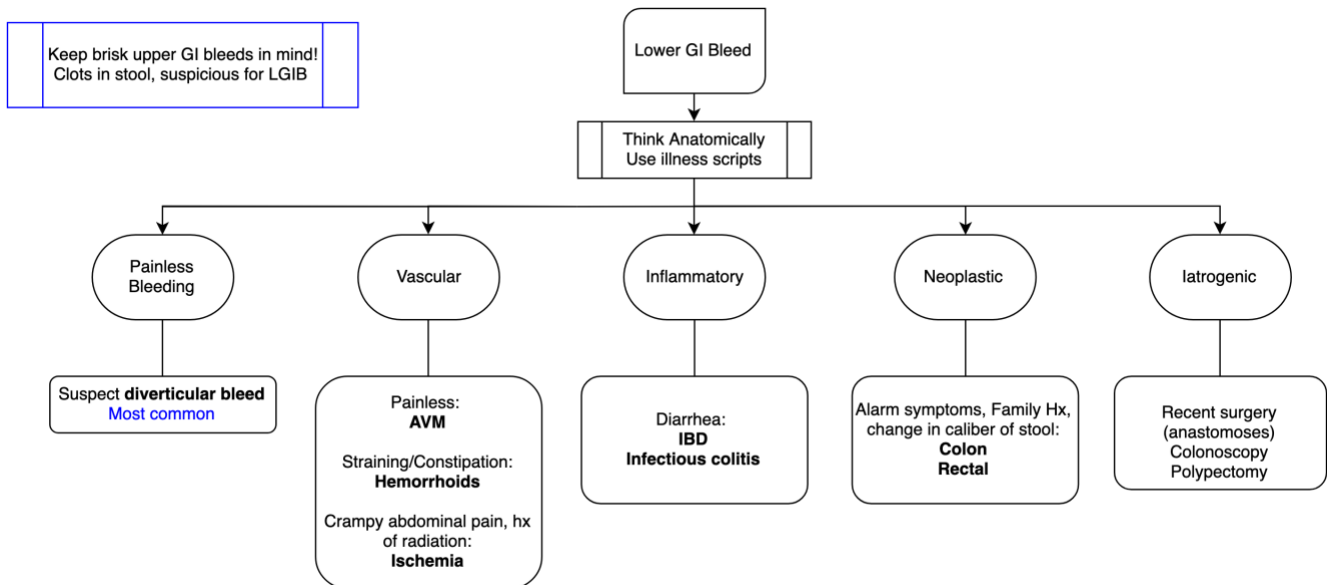
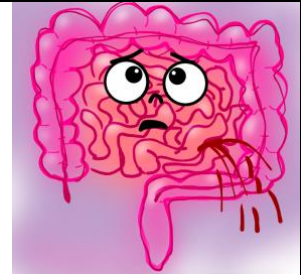
- **Resuscitation!**
 - Access: 2 large-bore peripheral IV → Fluids
 - Transfusion threshold: **Hg < 7**. Except: *exsanguination*, known *cardiovascular* or *cerebrovascular* disease. See NVUGIB handout for more details.
- IV **octreotide**: lowers portal pressure. 50 mcg IV bolus → 50 mcg/hr drip, for 3-5 days
- Antibiotic prophylaxis (mortality benefit): IV ceftriaxone (5 – 7 day course)
- **Proton pump inhibitor, IV BID**: want a gastric pH > 6 to facilitate clot formation
- **Erythromycin**: promotes gastric emptying via motilin-like properties → good endoscopic views (administer 30-60 minutes prior to EGD; can use metoclopramide as alternative)
- **Endoscopy** for variceal:
 - **Within 12 hours!**
 - Post-Endoscopy: monitor for re-bleeding, hepatic encephalopathy
- Primary prophylaxis (no prior variceal bleed):
 - Baseline upper endoscopy q1-3 years to screen for varices
 - If small varices + advanced cirrhosis; or med-large varices + any cirrhosis
 - Non-selective beta-blocker or serial endoscopic banding (not both)
- Secondary prophylaxis (s/p variceal bleed):
 - Both non-selective beta blockade + serial endoscopies & banding



RUN THE LIST

Lower GI Bleed

Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Navin Kumar



1. Initial Steps:

- Is the patient hemodynamically stable? vital signs, triage
- Resuscitation: 2 large bore peripheral IVs, IV fluids
- Medications to consider holding:
 - aspirin, anti-platelets, anti-coagulants
 - Consider need for reversing anticoagulation

2. Management

- Proton pump inhibitor, IV BID if brisk hematochezia with hemodynamic instability → suspect upper source (15% of cases!)
- Transfusion threshold same as UGIB, Hg < 7 (extrapolated from UGIB literature)
- Diagnostic Studies:
 - **Gold standard = Colonoscopy**, pt needs to be hemodynamically stable, within 24 hours. Bowl prep very important! Both diagnostic and therapeutic:
 - Argon plasma coagulation therapy: radiation proctitis, AVM
 - Clip/Cautery: diverticular, post-polypectomy
 - Video capsule endoscopy: to diagnose small bowel bleeding sources
 - Push/balloon enteroscopy: to diagnose and treat small bowel bleeding sources
 - Localizing scans (all require active bleeding): may use if patient is hemodynamically stable but rebleeding after negative EGD/colonoscopy, or if patient is hemodynamically unstable and thus prepping for a colonoscopy is not an option
 - CT-angiogram (need to give contrast)
 - Tagged RBC scans (localized to general areas and thus not as specific)
 - IR angiography. No prep needed, can intervene, but risk of ischemic complications. **If unstable → go straight to IR for potential embolization**

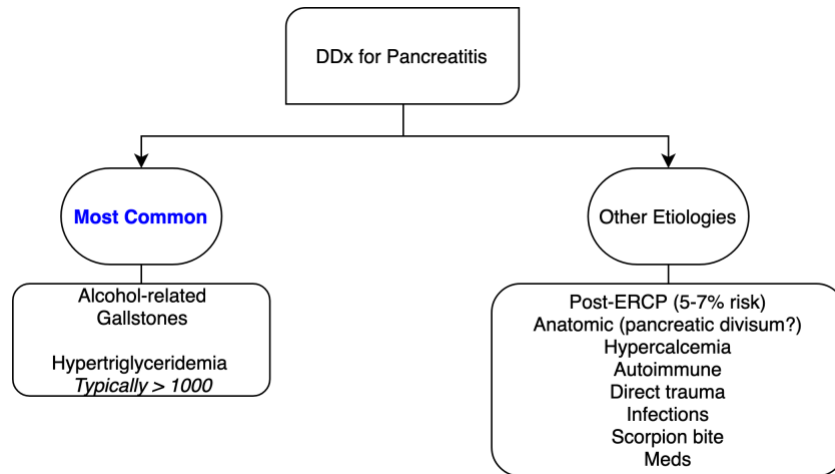
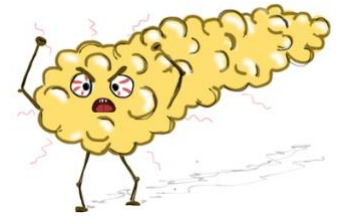


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Pancreatitis

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Navin Kumar



1. Overall Approach

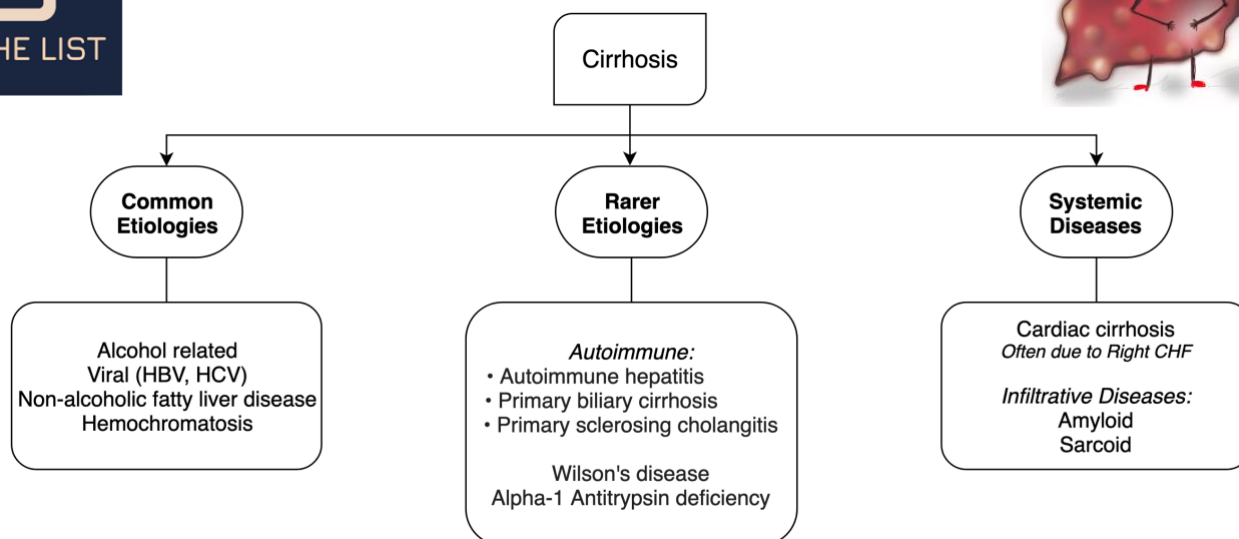
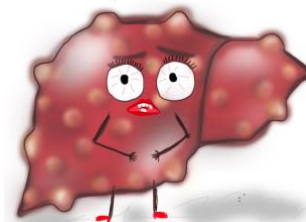
- Diagnostic Criteria = 2/3 of the following:
 - Clinical presentation: epigastric pain to the back, nausea, vomiting
 - Biochemical pancreatic inflammation: lipase/amylase > 3X upper limit of normal
 - Radiographic: CT with IV/PO contrast (US and MRI other options)
- Severity, can use scores: SIRS, BISAP
 - Mild: no end-organ failure or systemic complication
 - Moderate/Severe: local complications or persistent organ failure
 - Elevated Hg, BUN, Cr: worse prognosis given intravascular volume depletion

2. Management:

- NPO: bowel rest.
 - Advanced diet if: pain is improving, no signs of ileus. **Enteral feeding preferred**
 - Mild: low fat/solid diet (no need to start with clears)
 - Moderate-Severe: 3 days of NPO ok, then enteral feeding if unable to take PO
- Fluid resuscitation:
 - Aggressive, maintenance 250-500cc/hr – **within 24h**, then start peeling back
 - Consider Foley to monitor, **goal 1 cc/kg/hr urine output**, trend Hg, Cr, BUN
- Pain control
- Diagnostic studies:
 - Liver enzymes (cholestatic pattern?)
 - Fasting lipids
 - RUQ abdominal ultrasound
 - CT scan: contrast in an intravascularly dry patient is risky. Get if you think something else is going on, or complications develop. **NOT** up-front.
- Watch for complications:
 - CBD stone, think about ERCP (not up-front, trend LFTs – unless cholangitic!)
 - Acute complications: ARDS, SMV thrombosis, electrolytes, volume from IVF
 - Subacute (few days): fluid collection, pancreatic necrosis
 - Longer (> 4 weeks): pseudocyst, abscess, chronic pancreatitis

Cirrhosis

Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Navin Kumar



1. **Decompensated?** Think: ascites, spontaneous bacterial peritonitis (SBP), Variceal hemorrhage, hepatic encephalopathy + others.

2. Physical Exam:

- Portal hypertension: Caput medusa, ascites/fluid wave
- Hyperestrinism: spider angiomas, gynecomastia, palmar erythema
- CNS: hepatic encephalopathy

3. Labs:

- Assess synthetic function: INR, albumin
- SBP? get **diagnostic paracentesis** early! look for **> 250 polys, SAAG > 1.1**
- Workup in a new cirrhotic: If idiopathic, consider biopsy
 - Viral hepatitis serologies (HBV, HCV)
 - Iron studies
 - Autoimmune: ANA + specific antibodies (anti-mitochondrial, anti-smooth muscle)
 - Other: serum ceruloplasmin, alpha-1 antitrypsin level

4. Initial Management = **VIBES**:

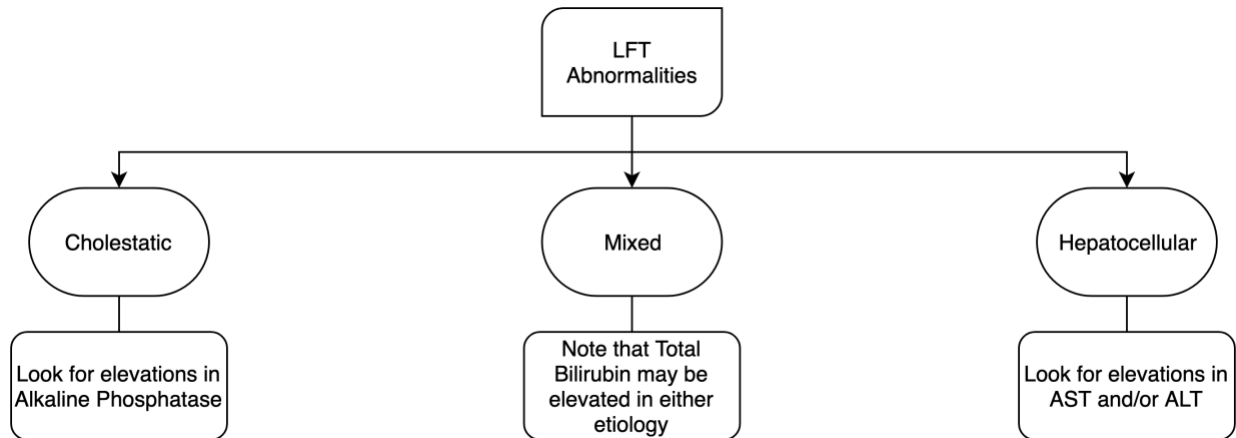
- **V**olume:
 - salt restrict
 - diuretics (spironolactone & Lasix at 5:2 ratio) → Large volume paracentesis
 - Remember to give albumin if LVP!
- **I**nfection: think SBP, one option is IV ceftriaxone, albumin d1 & d3, prophylaxis w/ cipro
- **B**leeding: non-selective beta-blockers (gets at underlying pathophys) > banding (if large)
- **E**ncephalopathy: lactulose ± rifaximin
- **S**creening/**S**urgery:
 - Vaccination: HAV, HBV, flu, pneumovax
 - Avoid alcohol
 - HCC screening: ultrasound every 6 months
 - Surgery (transplant): consider when MELD > 15 & evidence of decompensation



RUN THE LIST

Biliary Pathology

Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Navin Kumar



- I. DDx based on Anatomy: Patient w/ fever, RUQ abdominal pain, + Murphy's sign
 - **Symptomatic cholelithiasis (biliary colic):** stone transiently obstructing the cystic duct
 - **Acute cholecystitis**
 - stone impacted in cystic duct
 - acalculous (~10% of cases, usually critically ill patients)
 - **Choledocholithiasis:** stone in common bile duct (CBD). Very strong predictors of CBD stone (any of the following):
 - Visualize CBD stone on ultrasound
 - Presenting with ascending cholangitis
 - Total Bilirubin > 4
 - **Ascending cholangitis: emergency.** Think Charcot's Triad (RUQ pain, fever, jaundice) and Reynold's Pentad (Charcot's + altered mental status and hypotension).
- II. Initial Management:
 - **Labs:** CBC, LFTs, *Imaging:* RUQ abdominal ultrasound
 - **Symptomatic cholelithiasis:** cholecystectomy in the outpatient setting
 - **Acute cholecystitis:**
 - Cover gram negative rods & anaerobes (empiric antibiotics, example: Pip-tazo, cipro+metronidazole).
 - Keep antibiotics going until source control is achieved (cholecystectomy)
 - Cholecystostomy tube (by IR) used if patient is not a surgical candidate
 - Extend antibiotic course if patient has documented bacteremia
 - **Choledocholithiasis:** ERCP to remove CBD stone followed by cholecystectomy
 - **Ascending cholangitis:** emergent ERCP, IV antibiotics, IV fluids → cholecystectomy
 - **Consultants:**
 - Surgeons should be involved in all cases
 - GI when there is concern for CBD stone

Acute Kidney Injury

Handout compiled by Moses Murdock (@haematogonist)

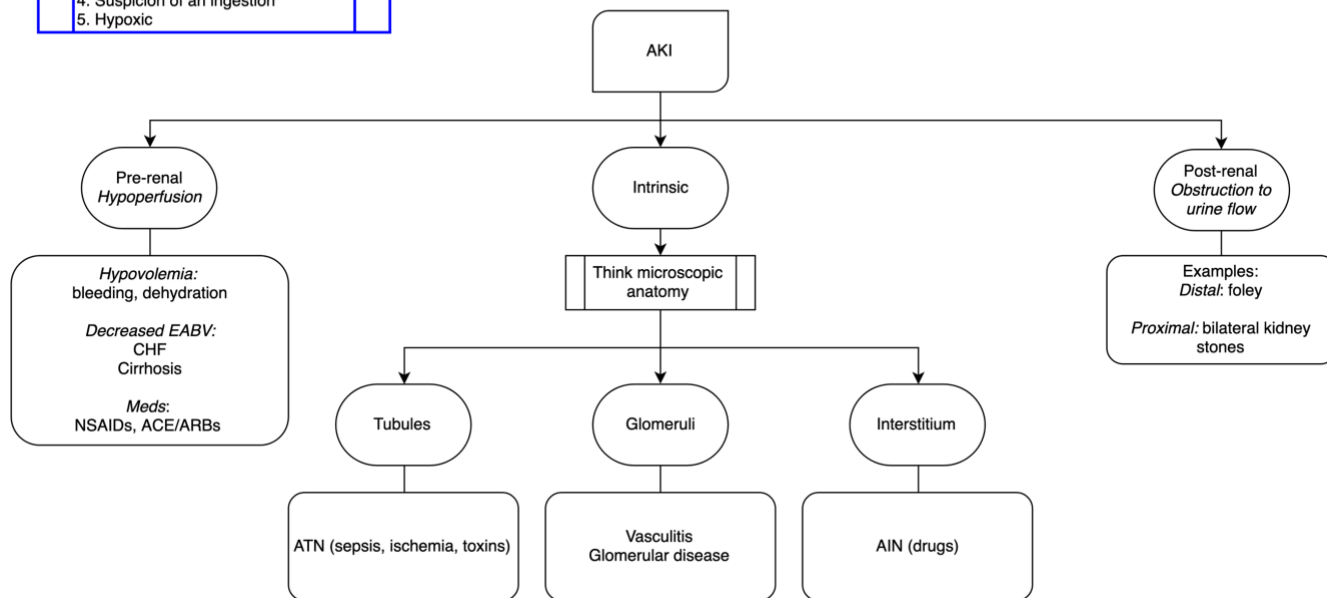
Discussant: Dr. Sushrut Waikar



1. Diagnostic Approach:

How urgent? 5 Concerning features:

1. Hyperkalemia
2. Magnitude in Cr rise
3. What is the UOP, Oliguria/Anuria
4. Suspicion of an ingestion
5. Hypoxic



2. Management:

- Suspicion for volume depletion → give fluids!
- Assess obstruction → renal ultrasound
- Take a look at med list
- Labs:
 - Electrolytes, BUN, Ca
 - Ca, Phos, Uric acid,
 - CBC w/ diff (eosinophilia can be clue for AIN)
- Urinalysis
 - Cells: infection vs. inflammation
 - Protein: assess for nephrotic syndrome
 - Casts
 - Muddy brown → suggestive of ATN
 - RBC → glomerulonephritis
 - WBC → AIN
 - Hyaline → pre-renal azotemia
 - Urine electrolytes of interest: Na, K.
 - FeNa < 1% suggestive of pre-renal azotemia...but **lots** of exceptions
 - FeNa: should **not** be sole basis for deciding on IVF
- Renal Replacement Therapy:
 - AEIOU to remember some indications: acidosis, electrolyte abnormalities (exp: hyperkalemia), ingestions (exp: ethylene glycol), Overload (severe, pulmonary edema), uremia (encephalopathy, pericarditis)

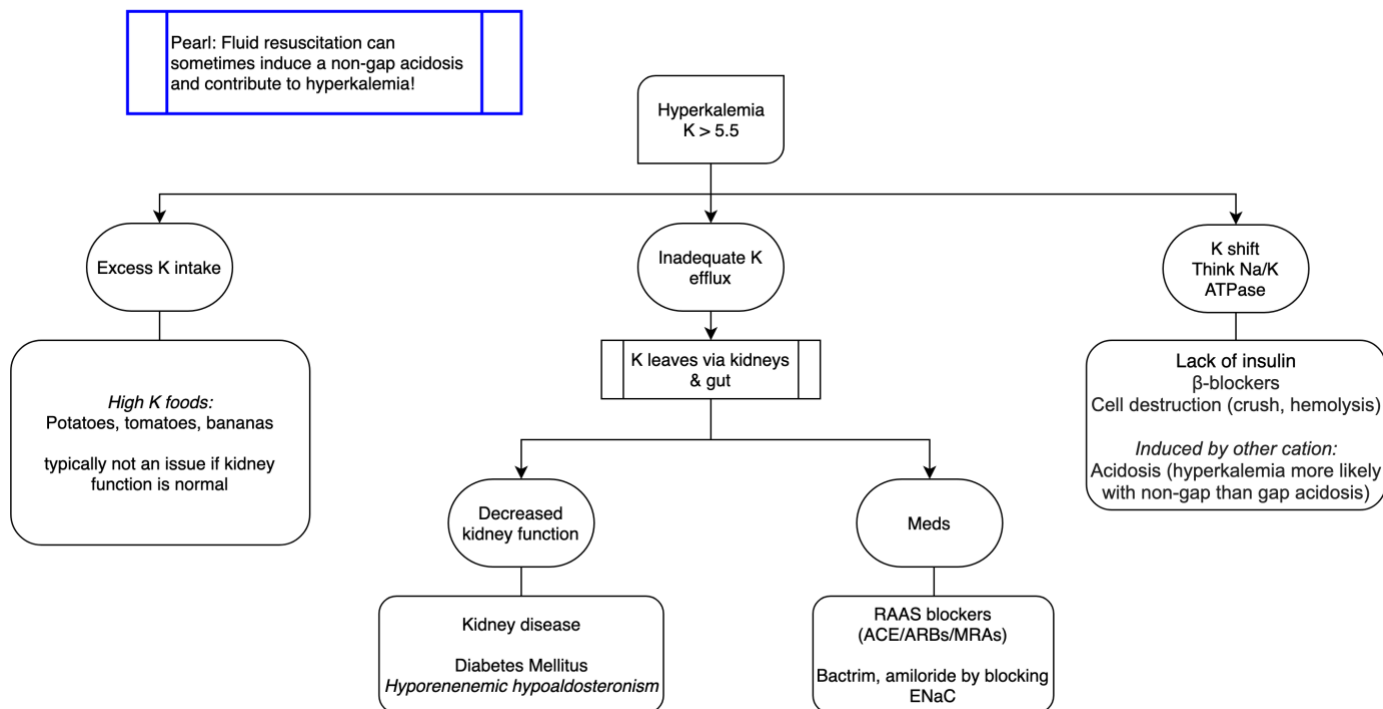
Hyperkalemia

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Ankit Patel



1. Diagnostic Approach:



2. Management:

- Workup:
 - Repeat measurement: to trend and to r/o pseudohypokalemia (suspect in high WBC or tubes sitting out for prolonged periods of time)
 - **Get EKG:** peaked T-waves → increased PR interval → QRS widened → sine wave
- Treatment:
 - Stabilize cardiac membrane: Calcium gluconate
 - Shift K:
 - Insulin: activates Na/K ATPase (consider dextrose if glucose < 250)
 - β-agonist (exp: albuterol) 10X dose than used for COPD
 - Eliminate K through:
 - Urine: loop diuretics (can give IVF simultaneously, very effective!)
 - GI system:
 - a. kayexalate (can cause ischemic necrosis/ischemic colitis and perforation – watch out in patients w/ gut pathology.
 - b. New, safer alternatives (exp: Patiromer, Sodium Zirconium cyclosilicate)
 - Dialysis: patients already on dialysis → consider extra session.

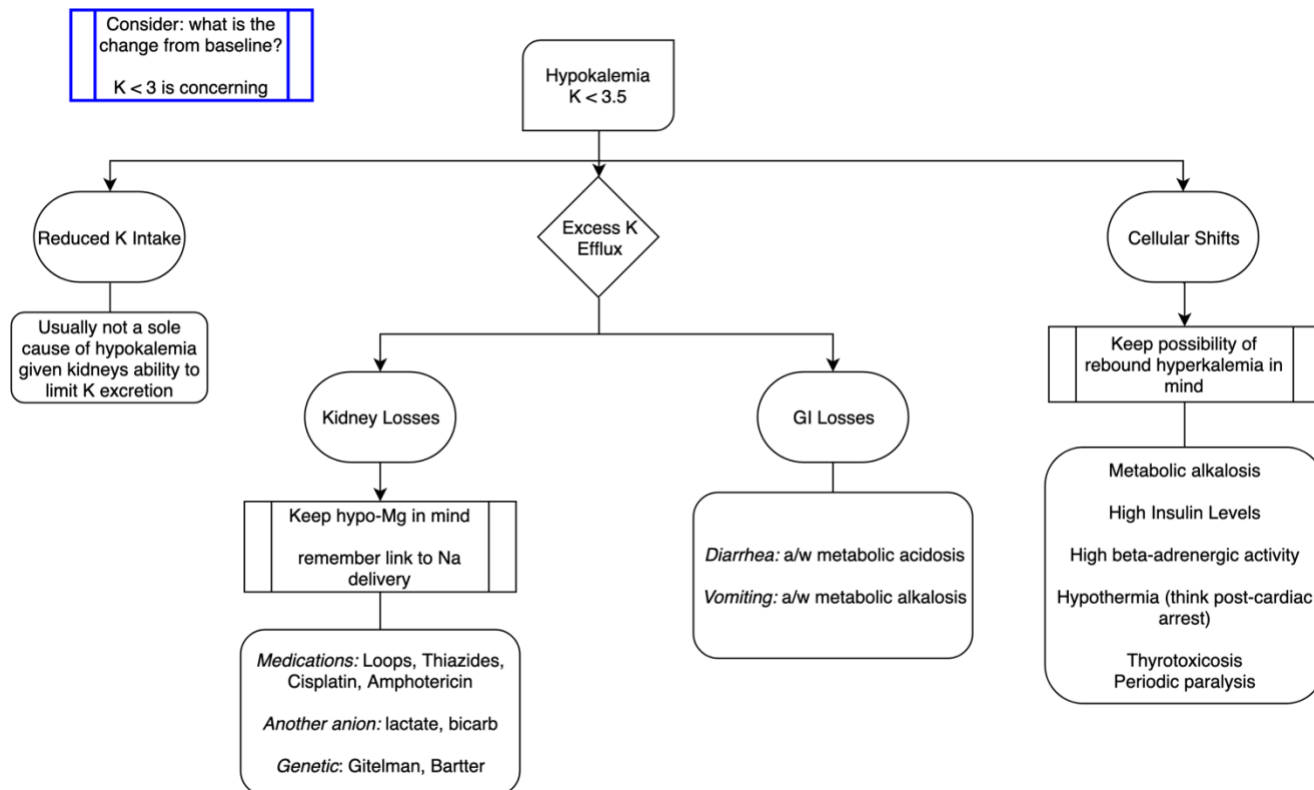
Hypokalemia

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Ankit Patel



1. Diagnostic Approach:



2. Management:

- Workup:
 - Repeat measurement
 - Get an EKG: flattened T-waves, U waves, prolonged QT, arrhythmias, asystole
 - Urine K:Cr to determine if urinary potassium losses
 - Trend K as you replenish, watch out for rebound (especially if you suspect a shift etiology)
- Treatment:
 - If chronic, total body potassium depletion can be 100 mEq for every decrease in serum K of 0.2 mEq/L.
 - Replenish: 10 mEq for every 0.1 away from 4
 - Careful in patients with kidney disease. 10 mEq/ serum Cr for every 0.1 mEq/L increase in serum K desired
 - 40 mEq q4 – 6h orally
 - 10 mEq/h IV, central access is ideal
 - Remember to replete magnesium to allow kidneys to minimize urinary potassium excretion.



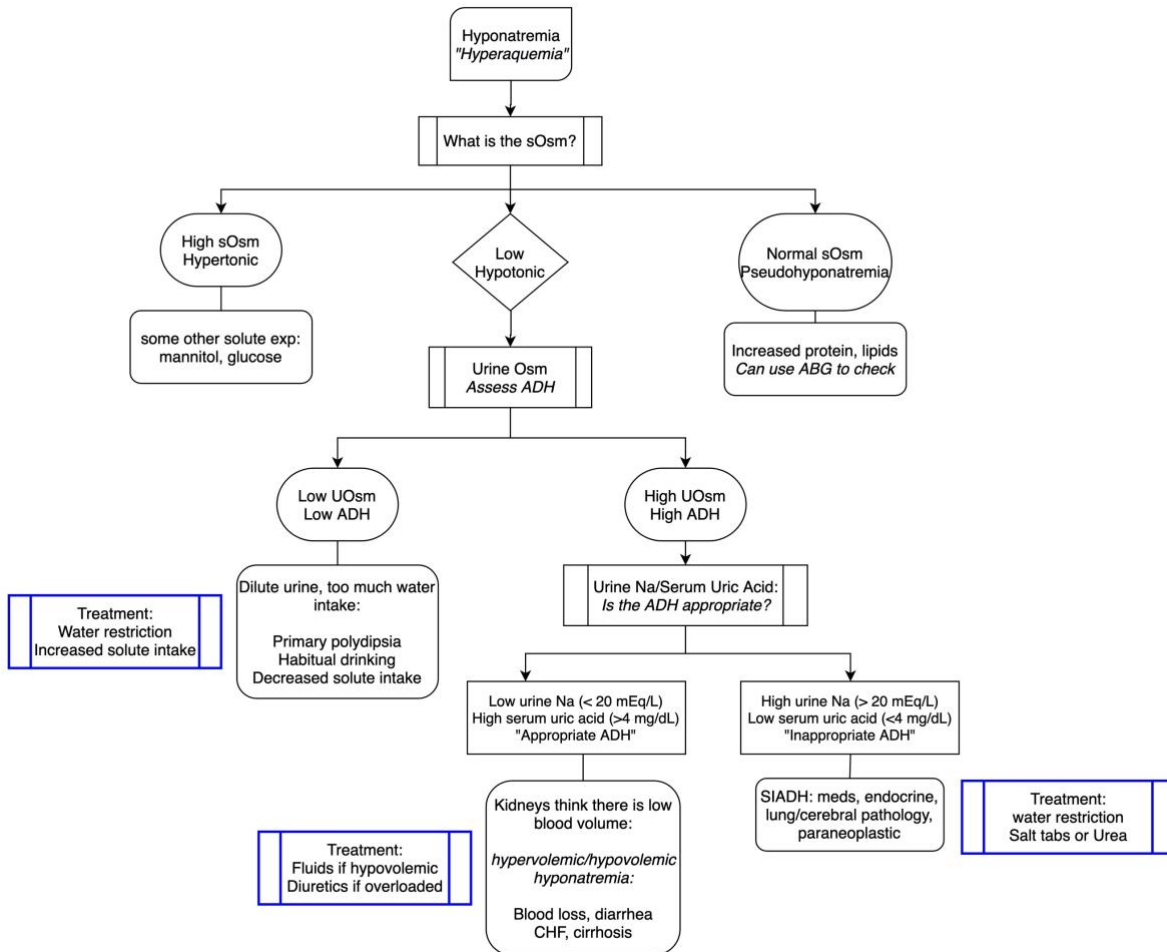
Hyponatremia



Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Ankit Patel

1. Diagnostic Approach: severity, change from baseline, symptomatic?

- Symptomatic? Headache, nausea, vomiting, dizziness, seizures, brain herniation



2. Management:

- Workup:
 - If no prior labs, assume chronic hyponatremia
 - Urine Na: confounded by Na intake or diuretics
 - Check Na frequently during Tx: q1h in severe cases
 - Trending Urine Osm & Na can help assess whether ADH is being turned off
- Treatment:
 - Symptomatic:
 - hypertonic saline to increase serum Na 1-2mEq to improve symptoms
 - If hyponatremia occurred within 48h → correct to baseline within 24h
 - Chronic hyponatremia
 - 4 – 6 mEq in first 24h (to avoid osmotic demyelination syndrome)
 - If overcorrecting, give D5W and consider DDAVP



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Hyponatremia

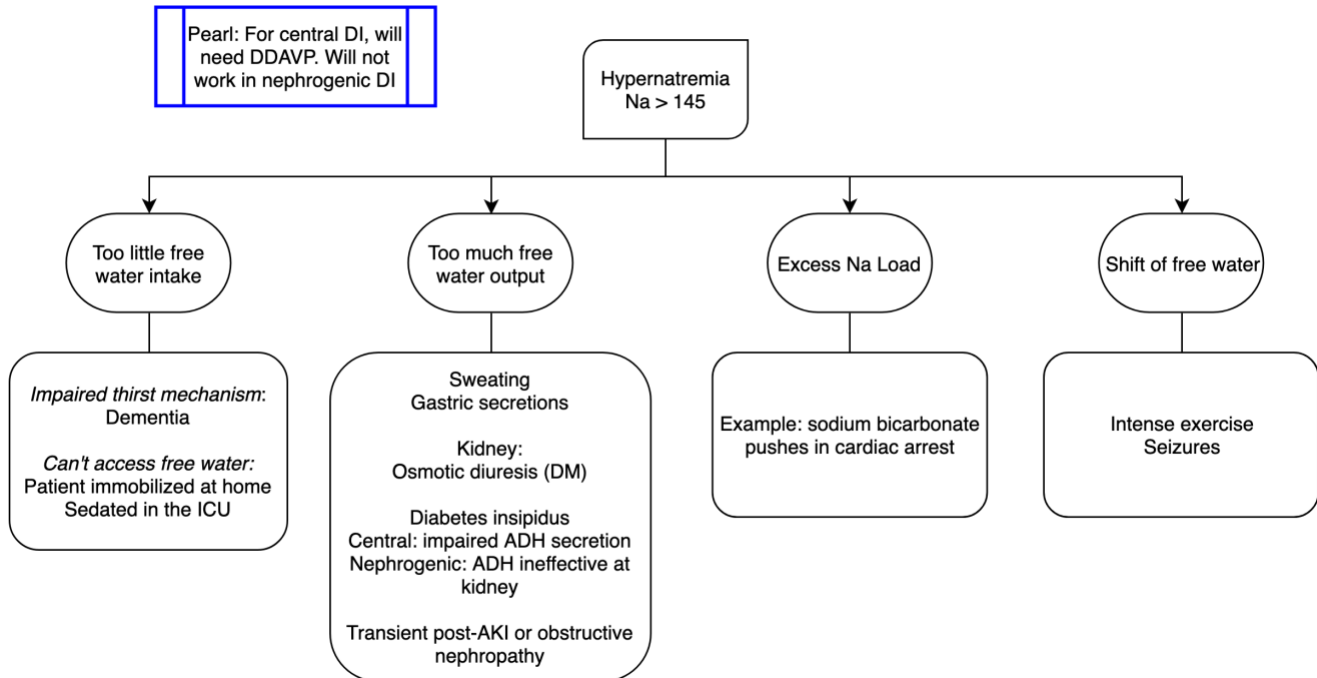
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Discussant: Dr. Ankit Patel



1. Diagnostic Approach:

- Often related to impaired thirst mechanism
- Consider severity and change from baseline



2. Management:

- Workup:
 - Clinical history is key!
 - Can measure Na/K in fluids. If less than serum → electrolyte free water loss
- Treatment:
 - Chronic (> 48h): correct slower than 12 mEq/24h
 - Acute (24 – 48): correct to baseline within 24h
 - Calculate free water deficit: <https://www.mdcalc.com/free-water-deficit-hyponatremia>
 - Route of administration:
 - PO: preferred in patients who can tolerate it
 - NG/IV also options
 - Consider ongoing free water losses!
 - Monitoring: frequent serum [Na] – q2-3h initially

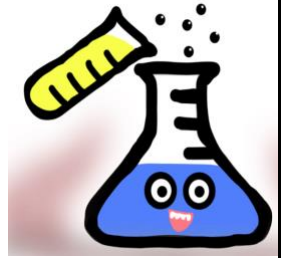


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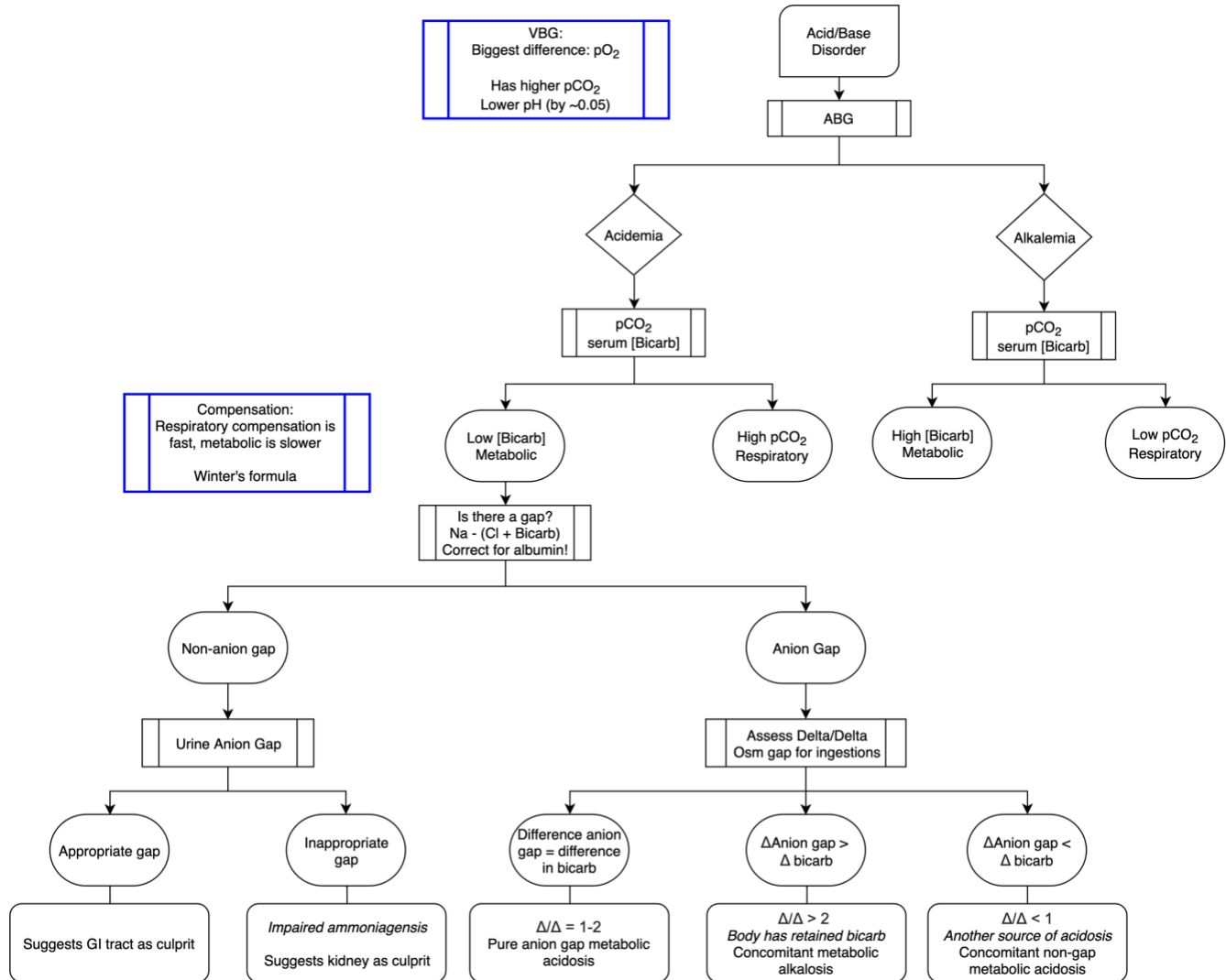
Acid-Base Disorders

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Ankit Patel



1. Diagnostic Approach:



2. Additional Pearls:

- For metabolic alkalosis 2/2 vomiting – very difficult to correct if chloride depletion isn't addressed
- IV bicarbonate generates CO₂ – if patient can't breathe it off, can cause problems
 - IV bicarb most helpful: non-gap acidosis most responsive
 - Lactic acidosis: least responsive
 - pH < 7.1, can consider more strongly due to hemodynamic effects of acidosis

Approach to Urinalysis

Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Sushrut Waikar



1. Pearls

- UTI: symptomatic pt: +WBC, + RBC, bacteria, +LE, + nitrites
- + WBC, +LE but no bacteria = sterile pyuria, Dx to consider:
 - Prostatitis, Interstitial cystitis
 - Genitourinary TB
 - Inflammation in kidney, exp: AIN
- Patterns to recognize:
 - Heme+ but no RBC on microscopy
 - Intravascular hemolysis
 - Rhabdomyolysis
 - Glucose+
 - Uncontrolled DM or pt on SGLT2 inhibitor
 - Proximal tubule dysfunction: multiple myeloma, heavy metals, drugs (tenofovir) aka Fanconi syndrome
 - negative dipstick, +protein/high UPCR. Suspect multiple myeloma.
 - urine albumin:Cr often used to screen patients with DM
- Effect of urine concentration
 - 1.003 = very dilute. If 1+ protein → could be a ton of protein!
 - 1.025+ = very concentrated. If trace protein → probably nothing. Note: glucose & contrast in urine can cause specific gravity to be artificially high!
- Urine sediment associations:
 - Hyaline casts: pre-renal azotemia
 - Muddy brown casts: ATN (not-specific, RPGN, vasculitis etc.)
 - WBC casts: AIN
 - RBC casts: acute glomerulonephritis (look for dysmorphic red cells)
 - Squamous/epithelial cells: may indicate lack of a clean catch
- If Foley specimen: RBC is expected, chronic inflammation in long-term Foley (WBC, bacteria).
- Asymptomatic bacteriuria (>100K CFU of a single species)
 - Don't necessarily treat except:
 - Pregnant
 - Kidney transplant recipients
 - Undergoing surgery

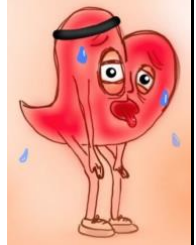


RUN THE LIST

Acute Decompensated Heart Failure

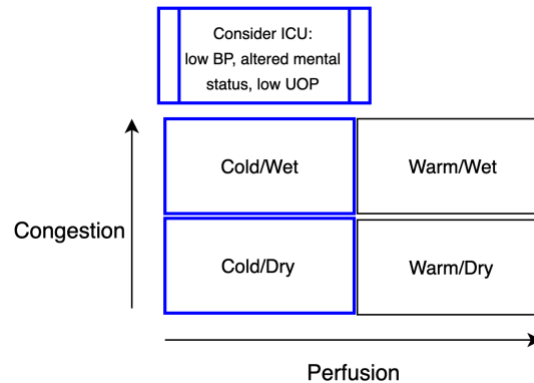
Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Emily Lau



1. Frameworks: LVEF & Hemodynamic Profile

- By LVEF: < 40% (HFrEF), >50% (HFpEF), 40 – 50% (mid-range EF)



2. Initial Steps

- Triage: does the patient need to go to the ICU for: diuresis, pressors, inotropes, PA catheter?
- Usually first step is diuresis
- Close monitoring is key: VS, labs, UOP, serial physical exam, repleting electrolytes

3. Management:

- Workup:
 - History: what was the trigger?
 - Common: difficulty maintaining 2g NaCl, 2L fluid restriction
 - To keep in mind: thyroid/renal disease, toxins (alcohol, cocaine, meds) vs. idiopathic
 - **Can't miss:** ischemia/CAD, arrhythmias, uncontrolled HTN, valvular disease
 - Physical exam: mental status, extremity warmth, UOP, JVP, edema/ascites, pulmonary/CV exam
 - Labs: CBC, BMP, troponin, LFTs, lactate, NT-pro-BNP
 - Imaging:
 - EKG especially if ischemia on DDx, telemetry for arrhythmias
 - CXR: assess pulmonary edema, size of heart
 - TTE: LVEF, regional wall motion abnormalities, valvular dysfunction
- Therapy: maintain adequate CO = HR x SV
 - Preload: diuresis, usually loop diuretics. IV preferred to avoid absorption problems due to gut edema!
 - Afterload: ACEi, nitrates
 - Contractility: inotropes
 - Neuro-hormonal blockade (if HFrEF): MRA/spironolactone
 - Consults: consider if concerned for shock, ischemia, difficulty w/ diuresis patient. Every CHF patient should have an outpatient cardiologist!



General Management of CHF

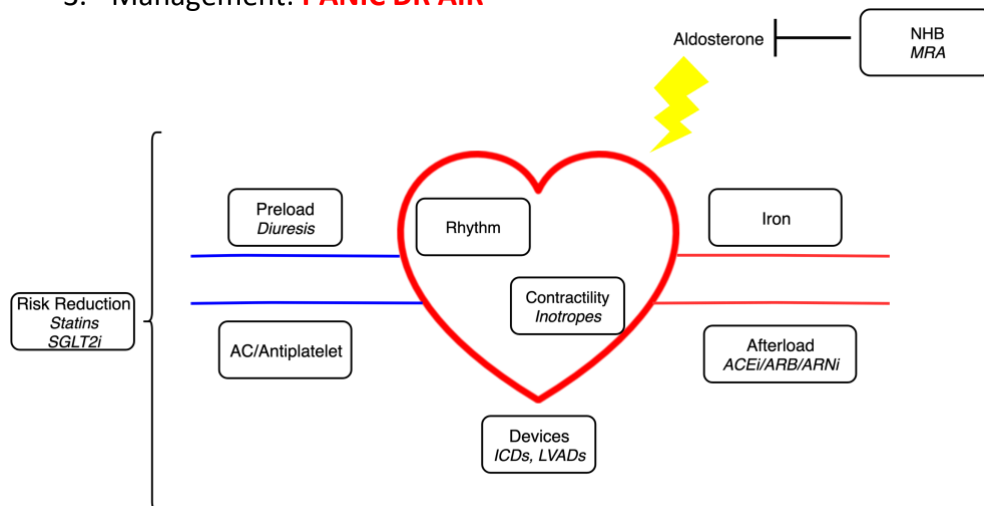
Handout compiled by Moses Murdock (@haematognomist)

Discussant: Dr. Emily Lau

Special thanks to Drs. Malishchak & Wang



1. Etiologies: see Decompensated Heart Failure Episode. Key: HFrEF vs. HFpEF
2. Disease progression: NYHA Classes: no symptoms (1) → symptoms at rest (4)
3. Management: **PANIC DR AIR**



Tips for Patients:

1. Daily weights
2. Gaining > 3 lbs, increase diuretic & call clinic.
3. Importance of meds, physical activity, BP checks and reducing salt/fluid intake

Preload: Diuresis, dosing to daily weights & volume exam, watch electrolytes & Cr

- Loop diuretics (furosemide, torsemide), exp: -1L net fluid
- Sequential nephron blockade: metolazone, chlorothiazide

Afterload:

- Mechanism: vasodilation → decreased afterload, increased SV
- Isosorbide Dinitrate, hydral, ACEi/ARB/Angiotensin Receptor-Nepriylsin inhibitor → mortality benefit in HFrEF

Neuro-hormonal blockade:

- Mechanism: decreased myocardial remodeling
- β-blockers (hold in cardiogenic shock!), spironolactone, eplerenone.

Intropes/**C**ontractility: “cold” patients

- Inodilators: dobutamine, milrinone
- Inopressors: dopamine, epinephrine, norepinephrine

Develop: *also consider heart transplant!*

- Defibrillators: *chronic CHF & stable*, LVEF < 35% → ICD
- Cardiac resynchronization tx: *chronic CHF & stable*. ↓ LVEF, QRS > 120-150, LBBB
- Mechanical circulatory support: *very sick patients* → Intra-aortic balloon pump, Ventricular Assist Devices, Tandem, ECMO etc.

Rhythm: Afib = rate/rhythm control. Ventricular tachycardia also common

Anticoagulation/Antiplatelet: Aspirin, anti-platelet for PCI in CAD. Anticoagulation for Afib

Iron per FAIR-HF – significant improvements in NYHA class, 6-minute walk & QOL

Risk reduction: secondary prevention statin or SGLT2 inhibitors



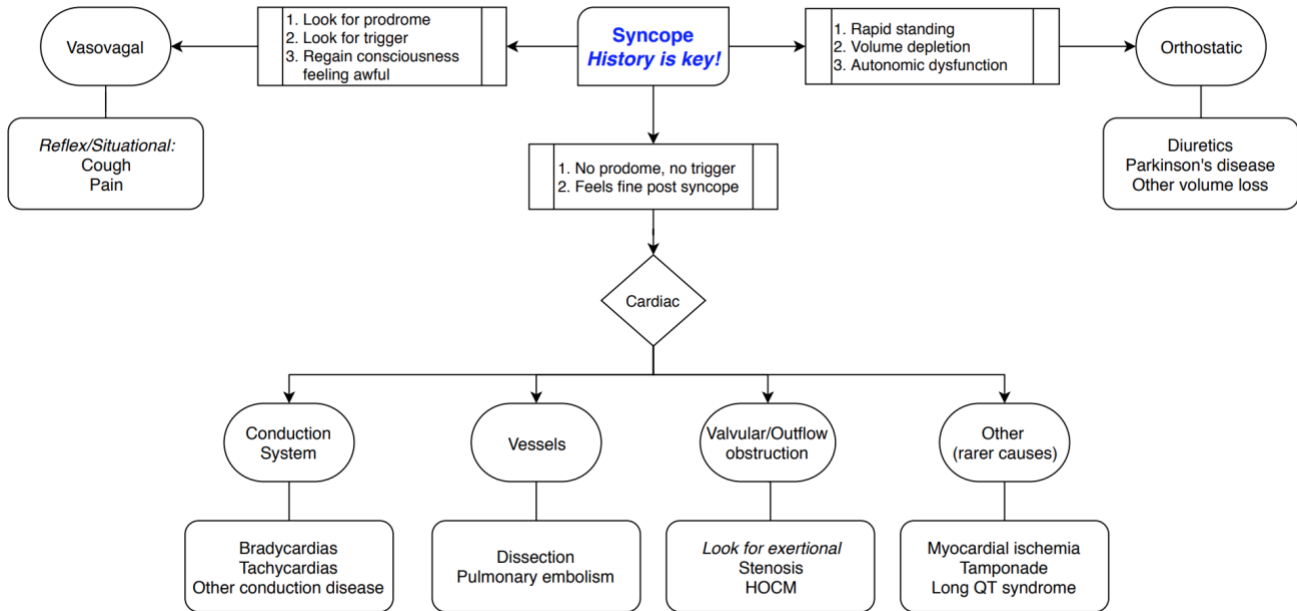
Cardiac Causes of Syncope

Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Jason Ryan



1. Definition:

- Sudden loss of consciousness due to hypoperfusion of the brain
- Absence of other causes: seizure, hypoxia, hypoglycemia, intoxication etc.



2. Workup: *be wary of over-testing*

- EKG: look for evidence of unhealthy conduction system: prolonged PR interval, LBBB, RBBB, slow sinus rate etc.
- In select patients:
 - Carotid ultrasound (to work up transient ischemic)
 - Orthostatic vital signs
 - Telemetry/heart monitors
- Who is high risk and/or deserves inpatient admission
 - Vasovagal → usually no need to admit
 - Cardiac cause that may recrudescence → warrants admission

3. Management:

- Immediate measures:
 - Lie down + elevate lower limbs
 - Obtain vital signs, history
- Indications for AICD (automatic implantable cardioverter defibrillator)
 - Survives ventricular Tachycardia, Ventricular fibrillation
 - High risk: very low EF especially in context of ischemia
- Guide to cardiology consult: is there something only they can provide?



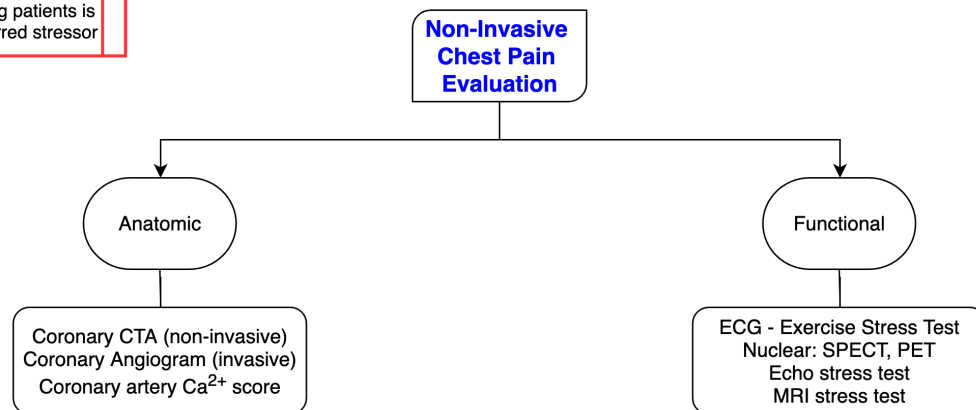
Non-Invasive Evaluation of Chest Pain

Handout compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Sanjay Divakaran



1. Bayes' Theorem: In patients at extremes of pre-test probability (very high or low), diagnostic testing may not affect clinical management. Testing can change management for those at intermediate risk.
 - In coronary artery disease (CAD), intermediate risk range is broad in American cardiology guidelines, 10 – 90%
 - Diamond-Forrester: character of pain, sex, age
 - [CAD consortium](#): character of pain, sex, age, clinical factors
2. What question are we trying to answer? For example:
 - For my patient with no known CAD, are his/her symptoms due to flow-limiting CAD?
 - For my patient with known CAD, are the return of his/her anginal symptoms from flow-limiting CAD, and if so, in what myocardial territory is the ischemia?
 - In asymptomatic severe aortic stenosis, is the patient truly asymptomatic with exercise?

Pearl: If it is safe, exercising patients is the preferred stressor



3. Deciding between tests:
 - Anatomic:
 - In lower-intermediate risk patients, coronary CTA can help in guiding nuanced discussions of risk-factor modification as non-obstructive plaque can be visualized
 - In a young patient with typical angina, coronary CTA may be useful to rule out an anomalous coronary artery with a malignant course as the cause of symptoms
 - Functional: what's the visualization?
 - Abnormal ECG at baseline (LBBB, ST changes etc.) – ETT-ECG will be non-diagnostic
 - Visualize myocardium, known CAD diagnosis – nuclear, echo, or MRI
4. Things to think about when interpreting the report:
 - How much did the patient exercise? Did the patient have symptoms during the stress test? Was there evidence of ischemia?
5. Counseling patients: when to come back. If pain is worse, changes in quality, occurs at lower exercise thresholds, or occurs at rest.



RUN THE LIST

Chest Pain

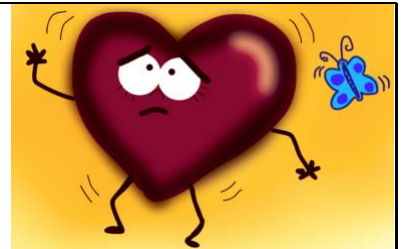
Handout compiled by Moses Murdock (@haematognoMist)
Discussant: Dr. Zaid Almarzooq



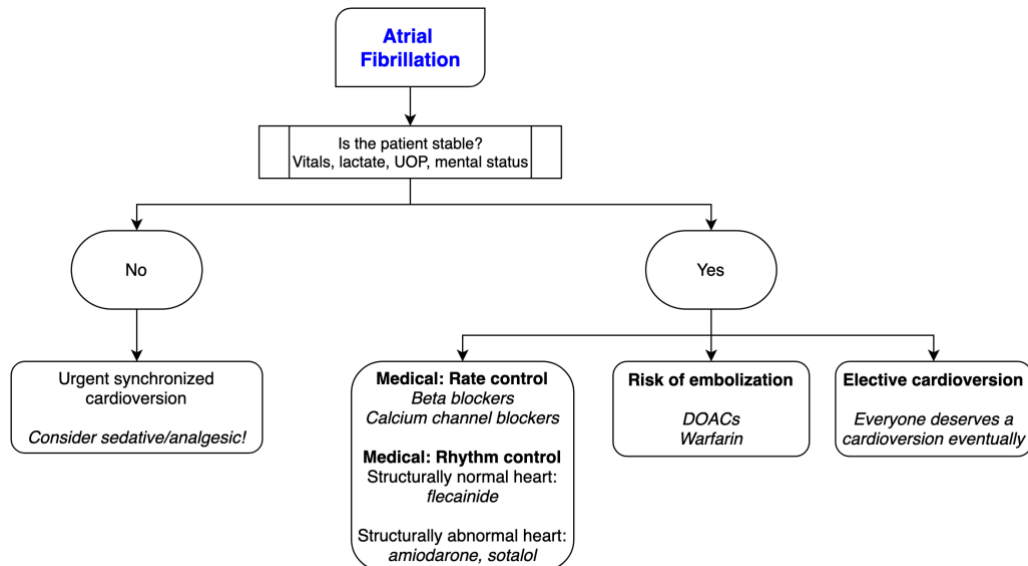
1. **Definition:** ACS = STEMI + NSTEMI + Unstable Angina
2. **History:** [SOCRATES](#) questions and risk factors (demographics, behavioral factors, family history)
 - Red flags:
 - Onset:
 - Sudden onset (aortic syndromes, PE, pneumothorax [PTX])
 - Gradual onset (ACS)
 - Character:
 - Dull pain (ACS)
 - Sharp, reproducible with palpation (less likely ACS)
 - Relieving/exacerbating factors:
 - Positional, pleuritic (less likely ACS)
 - Exertional (precursor to ACS)
 - Possible atypical symptoms in women, DM, elderly, and/or heart transplant recipients
3. **Physical Exam:**
 - Sick vs. not sick: what is the acuity, in distress?
 - Vitals: BP in both arms and radial pulse bilaterally: if discrepant (≥ 20 mmHg) consider aortic dissection; if bradycardia consider RCA occlusion
 - Murmurs: acute MR, VSD, free wall rupture (muffled heart sounds); JVD
 - Lung exam: decreased breath sounds (PTX)
 - Is the pain reproducible (costochondritis)?
4. **DDx (Can't Miss Diagnoses)** – similar to [CPSolvers schema](#)
5. **Diagnostic Tests:** *depends on DDX and pre-test probability*
 - ACS:
 - EKG (*compare to prior*). Often missed: RV infarct (right sided ECG), posterior MI (posterior ECG)
 - Troponin and CK-MB (use if considering reinfarction i.e., chest pain after PCI)
 - TTE (look for complication - MR, VSD, tamponade)
 - PE:
 - CT-PE
 - CXR (also helpful for PTX—air around lung, and esophageal rupture—air around mediastinum)
 - Aortic syndrome: CT-Aortogram
 - Other Labs: kidney function and coags (to determine contraindications to therapies)
6. **Treatment**
 - Risk stratification of NSTEMI and UA: [TIMI score](#) and/or [GRACE score](#)
 - Medical treatment:
 - 1st line: ASA 300mg chewable, heparin drip, nitroglycerin drip (*if bradycardic or potential RCA occlusion, may not be a good idea*).
 - **THROMBINS-A**
 - **Thienopyridines** – anti-platelets: (P2Y₁₂ inhibitors, e.g., clopidogrel)
 - **Heparin**
 - **RAAS inhibitors** – prevent remodeling (especially in reduced low LV)
 - **Oxygen:** if hypoxic. [Several trials](#) suggest harm in non-hypoxic pt
 - **Morphine:** for symptomatic benefit—not up-front, can mask ischemic symptoms
 - **Beta blockers:** first 24h, not in shock, HF, or bradycardic
 - **Invasive intervention (catheterization)**
 - i. STEMI: cath→90 minutes (door to balloon time), fibrinolytics→30 minutes (door to needle time)
 - ii. Consider more urgent cath in NSTEMI/UA if unstable, refractory chest pain, or high-risk score
 - **Nitroglycerin:** venodilator, coronary vasodilator
 - **Statins:** high potency (exp: atorvastatin)
 - **Aspirin**

Atrial Fibrillation

Compiled by Moses Murdock (@haematognomist)
Discussant: Dr. Zaid Almarzooq



1. Description: [non-organized atrial rhythm](#)
 - vs. organized rhythms: atrial tachycardia, atrial flutter, etc.
 - Paroxysmal: self-terminating within 7 days
 - Persistent: lasts for more than 7 days or requiring termination with cardioversion
 - Long-standing persistent: more than 1 year → permanent
2. Clinical presentation:
 - Asymptomatic
 - Palpitations, shortness of breath
 - Tachycardia-mediated cardiomyopathy & CHF. Key question: which came 1st, CHF or Afib?
3. Causes/Precipitants
 - Increased sympathetic tone (exercise, emotion)
 - Structural heart disease, thyrotoxicosis
 - [Alcohol](#)
4. Management: symptom control + prevention of cardioembolism



5. Clinical Pearls:
 - Rate control: don't need to normalize HR, [< 110 is reasonable target](#). Watch out for CHF
 - [For antiarrhythmics](#), think side effects. Exp: amiodarone: "LFTs/PFTs/TFTs"
 - Risk calculators for embolization vs. bleeding risk
 - [CHADS-VASC](#) (stroke risk)
 - [HAS-BLED](#) (bleeding)
 - DOACs (apixaban, rivaroxaban etc.): not favored in those w/ [prosthetic valves](#), obesity, compliance issues
 - Elective cardioversion:
 - If onset <48h &/or TEE ruling out clot in the heart → reassuring to proceed
 - Otherwise, wait for anticoagulation (3 weeks)
 - Anti-coagulate for at least 4 weeks after

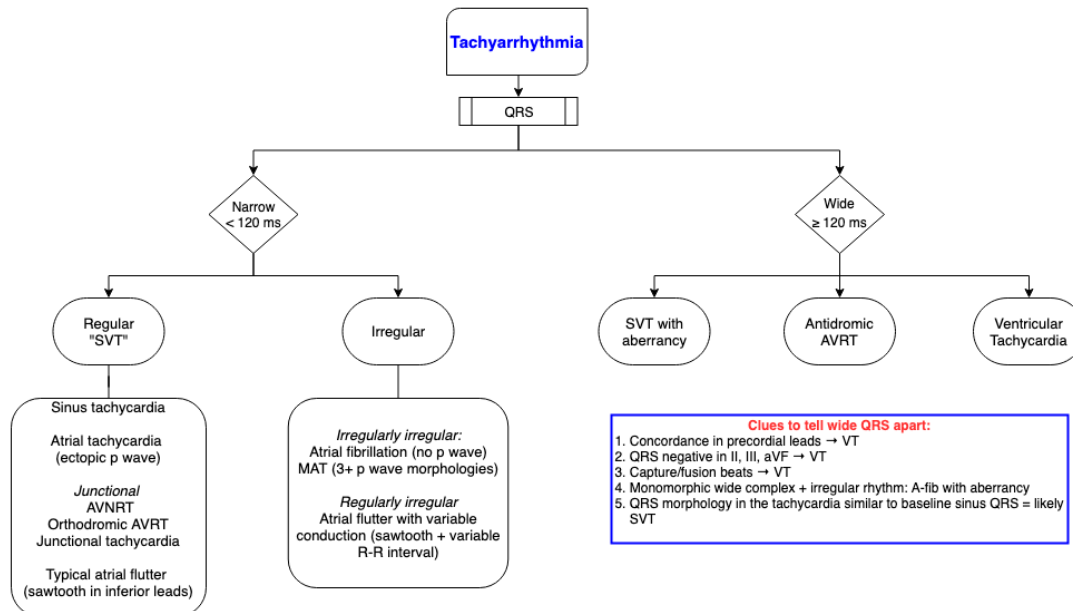
Tachyarrhythmias

Compiled by Moses Murdock (@haematognomist)
 Discussants: Dr. David Wang (host) & Victor Nauffal (discussant)



1. Approach to tachyarrhythmia:

- Is the patient hemodynamically stable? No → synchronized cardioversion vs. defibrillation
- ECG schema, consider using [Brugada criteria](#) to tell VT & SVT with aberrancy apart
- Check out the [SVT schema](#) from our friends over at the CPSolvers!



- Hx/Physical - illness scripts:
 - Young, narrow complex, regular → AVNRT > orthodromic AV reciprocating tachycardia
 - Mitral valve disease/structural heart disease, irregular rhythm → Atrial fibrillation
 - Pulmonary pathology → Atrial flutter or MAT (classically associated with advanced pulmonary disease)
- Labs: BMP, thyroid profile, troponin, BNP, urine toxicology (screening for stimulants)
- Imaging: Echo (looking for underlying structural or valvular heart disease)
- Altering AV node conduction. Should terminate AVNRT, AVRT, can clarify other arrhythmias
 - Maneuver: [modified Valsalva](#)
 - Pharmacologic: adenosine

2. Management:

- AVRT/AVNRT: rate control (beta blockers, CCB) → ablation
- Atrial tachycardia: rate control (β-blockers, CCB) → rhythm control (Class IC, III) → ablation
- Atrial Fibrillation: see dedicated RunTheList [episode](#)
- Atrial flutter: rate control less efficacious → ablation, anticoagulation similar to A-fib
- MAT: does not respond to cardioversion. Avoid rate/rhythm control medications. Focus on underlying trigger
- Sinus tachycardia: look for underlying trigger

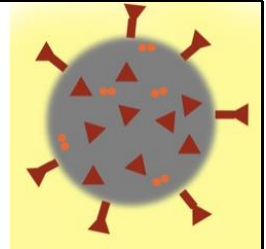


RUN THE LIST

Non-ICU Inpatient Management of COVID-19

Recorded on: 4/3/2020

Compiled by Moses Murdock (@haematognomist)
Dr. Navin Kumar (host) & Dr. Mary Montgomery (discussant)



1. COVID-19 Symptoms = *highly variable*

- Outside the hospital: rhinorrhea, cough, sore throat, muscle aches, anosmia, ageusia, diarrhea, abdominal pain, nausea, confusion etc.
- Presenting to ED: profound dyspnea > fevers, abdominal pain, diarrhea, altered mental status + the above
- Helpful this time of year, positivity of other respiratory viruses has nearly gone to zero

2. Diagnosis:

- RT-PCR on [nasopharyngeal swab](#). Test characteristics unclear
 - *Viral load highest at onset of illness, goes down after ~ 5 days in mild illness*
 - *High viral load in nasopharynx even in pre-symptomatic phase of illness*
 - Later on, sputum and lower respiratory samples may have better test characteristics
- Other labs:
 - Serology (not widely available yet), unclear association with immunity
 - Inflammatory markers: ferritin, CRP, ESR, D-dimer, LDH
 - Low pro-calcitonin
 - Lymphopenia
 - Elevated troponin and elevated CK in some cases
- Imaging: CXR/CT scans: most often interstitial opacities

3. Treatment: *supportive care is the cornerstone*

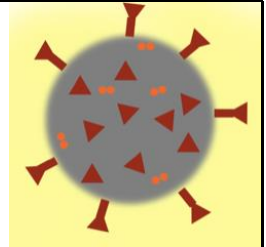
- Oxygenation: patients can worsen rapidly. Biggest predictor for severity is age. Other comorbidities may contribute: pulmonary disease, CKD, DM, HTN, CV disease, immunosuppressed states, rising inflammatory markers
- Favoring non-re-breather > HFNC/BPAP due to concern for aerosolization
- Experimental: *rapidly evolving*
 - Remdesivir: nucleotide analog. Clinical trial ongoing. [Case report](#)
 - Hydroxychloroquine: early data with some confounders, trials ongoing
 - IL-6 inhibitors: tocilizumab etc. no high-quality data to guide treatment

4. Brigham & Women's Hospital COVID-19 [Clinical Guidelines](#)



Starting Intern Year During a Pandemic

Compiled by Moses Murdock (@haematognomist)
Emily Gutowski (host) & Dr. Walker Redd (discussant)
4/24/20



1. Communication Skills:

- [Vital Talk](#): COVID-19 Communication Skills
- HMS Curriculum [subsection on communication](#)
- BWH Palliative Care skills training videos
 - ED – [goals of care and code status](#)
 - Hospital Medicine – [goals of care and code status \(goals c/w intubation\)](#)
 - Hospital Medicine – [goals of care and code status \(goals not c/w intubation\)](#)
 - ICU – [“sharing concern illness might get worse”](#)
 - ICU – [“discussing illness getting worse”](#)
 - ICU – [“talking about dying”](#)

2. Clinical Protocols & Practical Tips:

- [BWH COVID Protocols](#)
- [CORE IM practical tips](#)
- Core IM – [Goals of Care](#)



RUN THE LIST

Internal Medicine Virtual Learning Resources

Created by: Moses Murdock @haematognomist

1. General Medicine

- a. Tutorials: [Rabih Geha](#), [Tony Breu](#)
- b. Podcasts:
 - i. [CPSolvers](#) + app
 - ii. [Harrison's Podclass](#)
 - iii. [Morning report](#)
 - iv. [Curbsiders](#)
 - v. [CORE IM](#)
 - vi. [NEJM Resident 360 Curbside Consult](#)
 - vii. [Last Week in Medicine](#)
- c. OnlineMedEd: [Intern](#) content
- d. Strong Medicine - [Intern Crash Course](#)
- e. My Care Wishes - [UPenn](#)
- f. [Penn Pearls](#)
- g. [Penn Frameworks](#)
- h. [NEJM Rotation Prep](#)
- i. [IM anki deck](#)

2. Cardiology

- a. RunTheList [Cardiology + Handouts](#)
- b. [Cardionerds](#)
- c. [ECG WebMaven](#) - for practice
- d. [EKG course](#) - Strong Medicine
- e. EKG - [Life in the Fast Lane](#)

3. PCCM

- a. Mechanical Ventilation primer - [RebelEM](#)
- b. Mechanical Ventilation course -
 - i. [Youtube \(Strong\)](#) (2h:47m)
 - ii. [ICU Reach](#)
- c. [ACLS Institute](#) - Youtube
- d. Shock course - [Youtube \(Strong\)](#)
- e. [Internet book of Critical Care](#)
- f. [PFT Practice](#)

4. GI - RunTheList [GI + Handouts](#)

5. Renal

- a. RunTheList [Nephro + Handouts](#)
- b. [NephSim](#)
- c. [Freely Filtered Podcast](#)

6. Neuro - Emergency [head imaging](#)

7. Heme-Onc

- a. [ASH Case Studies](#) for Fellows
- b. [Practice peripheral smears](#)
- c. Heme-Onc emergencies [review](#)
- d. [Anticoag.net](#) (Evidence-based guidelines)
- e. [Plenary Session Podcast](#)
- f. [Outspoken Oncology Podcast](#)
- g. [Hematology Oncology Update Podcast](#)

8. ID/COVID-19

- a. Twitter Handles: [Saman](#), [Brief_19](#), [Carlos Del Rio](#)
- b. [HMS COVID curriculum](#)
- c. [BWH COVID Protocols](#)

9. Procedures

- a. [Thumbroll App](#)
- b. [NEJM](#) Videos
- c. [ATS ultrasound series](#)
- d. [RunTheList Episode](#)

10. Radiology Review

- a. [Learning radiology](#) for medical students
- b. [CXR course](#) - youtube (3h:10m)
- c. [Chest CT image](#)
- d. CoreIM ["Reading Room"](#)

11. Palliative Care

- a. [CAPC courses](#)
- b. [RunTheList Intern Tips](#)

12. Deliberate practice

- a. [Schema for Tackling a Case](#)
- b. Human diagnosis project ([HDx](#))
- c. [NEJM CPS](#)
- d. [CPSolvers Virtual Morning Report](#)

13. Evidence-Based Medicine

- a. [Wiki Journal Club](#)
- b. [Visual Med - CardioTrials](#)