Primary Care RAP August 2020 Written Summary

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Intro: Giant Cell Arteritis (GCA)?

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Pearls:

- **GCA is a systemic inflammatory vasculitis that classically presents in women over the age of 50 with headache, vision changes and jaw claudication.**
- **Diagnosis is based on having 3 out of 5 criteria, one of which is biopsy of the temporal artery (that may be negative).**
- **Treatment is steroids of varying duration but potentially of long duration.**

- **Giant cell arteritis (GCA, aka: temporal arteritis):** systemic inflammatory vasculitis involving the arteries that can result in a wide variety of systemic neurologic/ophthalmologic concerns that are not exclusive to the temporal arteries
- **Risk factors:**
    - Age > 50
    - Women
    - Northern European descent
    - Polymyalgia rheumatica
    - Family history
- **Pathophysiology:**
    - Immune-mediated disease with unknown trigger that lead to vascular smooth muscle wall breakdown leading to remodeling with intimal hyperplasia and vessel occlusion
- **Symptoms:**
    - New headaches
    - Abrupt vision changes such as transient monocular vision loss
    - Jaw claudication
    - Unexplained fever
    - Unexplained anemia
    - Malaise, fatigue
- **Diagnosis:**
    - American College of Rheumatology has 5 criteria - 3 out of 5 associated with a sensitivity of 93.5% and a specificity of 91.2%
        - 1. Age > 50
        - 2. New onset localized headache or localized head pain
        - 3. Temporal artery tenderness to palpation or decreased pulsation

        - 4. ESR > 50
        - 5. Positive arterial biopsy
            - May be positive for up to 4 weeks even after starting steroids
            - Sample needs to be 1-2 cm
            - Color doppler ultrasound can be a substitute for biopsy
            - May also be negative
- **Treatment:**
    - Steroids:
        - 1mg/kg not to exceed 60mg
        - Do not delay waiting for biopsy results
        - If already established or threatened vision loss, then methylprednisolone 500-1000mg daily x 3 days
    - Follow-up urgently with ophthalmology
    - Duration of steroids depends on the patient and may last for months to years with a taper
    - Patients generally get better quickly
    - Other options:
        - Tocilizumab - IL-6 receptor antagonist may be steroid-sparing option

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Patellar Injuries

Andy Little, DO, Drew Kalnow, DO, & Mizuho Morrison, DO

Pearls:

- ❏ Patellar fractures are most commonly due to direct, anterior impact to the patella

- ❏ Patellar dislocations are usually from force to either side of the knee or even simple twisting without contact.
- ❏ Reduction of patellar dislocation is quick, straightforward, and generally doesn't require sedation or systemic analgesia.
- ❏ Recurrent dislocations require prolonged immobilization for laxity to resolve.
- ❏ Significant swelling or laxity on exam suggests more serious injury than simple patellar dislocation.

- The history of injury is the most important aspect of evaluation distinguishing between a likely patellar dislocation and patellar fracture.
    - **High impact injuries to the anterior knee (e.g. falls on to the knee) are more suggestive of patellar fracture.**
    - Lower mechanism injuries involving lateral or medial forces, most commonly occurring in adolescents when competing in sports, suggests patellar dislocation.
- Incidence of patellar dislocation is higher in males because males much more commonly compete in contact sports.
- Risk of patellar dislocation, however, is higher in females compared to males when subjected to the same mechanism because of greater ligamentous laxity in females.
- Similar to shoulder dislocations, history of prior patellar dislocation is a major risk factor for future dislocation due to disruption of support structures and ligamentous laxity.
- **To reduce: gently extend leg while pushing the patella towards patellar groove of the femur.**
    - Reduction of patellar dislocation is usually straightforward and requires minimal to no anxiolysis and/or analgesia.
- **Post Reduction Treatment:**
    - First time dislocation: Treat with simple compression wrap and weight bearing as tolerated (WBAT).
    - Recurrent dislocation should be treated with extension bracing/knee immobilizer and also (WBAT).
- Recurrent dislocations require long term immobilization (6-8 weeks).
- NSAIDs PRN for analgesia are generally appropriate and adequate.
- **With higher mechanisms of injury, femur fractures, tibial plateau fractures, and knee dislocations become more likely.**
    - While many patients refer to patellar dislocations as "knee dislocations," these injuries are quite different in terms of the mechanism of injury and risk for serious complications, namely popliteal artery injury in the case of true knee dislocation.
    - Normal distal pulses and sensation do not exclude popliteal artery injury in cases of knee dislocation and emergent escalation of care to a center where CT angiography is recommended in these cases due to high risk of delayed vascular compromise/ischemia.
    - Morbidly obese patients can have knee dislocations with relatively minor mechanism (e.g. stepping off a curb wrong).
- **Exam:**

    - Patellar dislocations can be distinguished on physical exam by absence of significant soft tissue swelling/effusions.
    - **Laxity of the knee joint/multiple cruciate ligament disruption suggests knee dislocation.**
    - Additional physical exam findings include distraction/malalignment of the patella, most commonly laterally, compared to the rest of the knee (an imaginary line through the long axis of the femur should bisect the patella).
    - **Patients with patellar dislocations tend to preferentially hold their knee in partial flexion.**
    - Patients with a patellar fracture, conversely, tend to have a midline patella with tenderness and defect present with palpation.
        - Patellar fractures are commonly associated with a hemarthrosis/effusion.
    - **Comparing the injured knee to the contralateral knee can be helpful in identifying specific abnormalities.**
    - Plain films before any attempt at reduction are indicated if there is any suspicion for fracture.
- All patellar fractures should be immobilized with a straight leg knee immobilizer and can generally weight bear as tolerated (WBAT).
    - **It's important to consider the possibility of bipartite patella (occurring in ~5% of the population and often bilateral - 50% of cases) rather than a patellar fracture.**
        - Obtaining bilateral films can help to confirm bipartite patella.
- Comminuted and, especially, open fractures warrant immediate orthopedics consultation and escalation of care to an ED.

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Eosinophilic Esophagitis

Micaela Robb Bowers MD, Neda Frayha MD

Pearls:

- **EoE is an eosinophil-predominant inflammation of the esophagus that presents with dysphagia, chest pain and food impaction commonly in people in their 20-30's.**
- **Therapy is primarily diet modification based, acid suppression and topical steroids to slow disease progression of disease that can lead to permanent fibrosis and food impaction that can lead to esophageal rupture.**

- **Eosinophilic esophagitis (EoE):**
    - Immune-mediated eosinophilic-predominant inflammation of the esophagus
    - Tends to be men in 20-30's
    - Cases are rising (maybe more endoscopy)
    - Association between atopy and EoE
        - Studies show a seasonal relation between aeroallergens and EoE symptoms
- **Symptoms:**
    - Dysphagia
    - Food impaction
    - Chest pain
    - GERD symptoms
    - Abdominal pain
    - Nausea/vomiting
    - Anorexia
    - Food avoidance/modification/lubrication, take more time to eat
    - Some may jump up and down to get food down
    - Pearl: often develop habits over time so you have to probe to get to these symptoms
    - Young children present with failure to thrive while adolescents tend to present more like adults
        - Kinds tend to have persistence into adulthood
- **Diagnosis:**
    - EGD with esophageal biopsy with >15 eosinophils per high-power field
        - Exclude other causes of eosinophils like connective tissue disease, Crohn's disease, graft-versus-host disease
    - Don't necessarily have peripheral eosinophilia or IgE levels
- **Treatment:**
    - Acid suppression
        - Standard dose of PPI and then double after 4 weeks if no response
        - Repeat EGD at 8 weeks to see if there is response
            - If no response then stop the PPI
            - If response, continue at lowest effective dose
    - Dietary modification
        - 1. Six food elimination diet associated with IgE-mediated food reactions: milk, eggs, soy, wheat, peanuts, tree nuts, fish and shellfish
        - 2. Elimination diet: remove the six foods and then reintroduce slowly once in remission
            - Better data in children
        - 3. Elemental diet: drink only elemental formula
    - Topic glucocorticoids:
        - Swallowed budesonide or fluticasone that can be delivered via MDI without spacer or a slurry

    - Esophageal dilations
    - Monoclonal antibodies are being studied
- **Prognosis:**
    - Persistent but not life-shortening
    - Feared complication is significant food impaction that leads to esophageal perforation
    - No association with GI malignancies

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Iron Deficiency

Victoria Giffi MD, Paul Simmons, MD

Pearls:

- **Don't rely on the serum iron for anything. Ferritin is the most reliable measure of iron stores and can be confounded by inflammation.**
- **Every other day oral iron dosing is just as effective and better tolerated than daily.**
- **Feel free to give IV iron if you've maximized oral iron or consult hematology.**

- **Symptoms:**
    - Pearl: Fatigue arrives before the anemia

    - Pica - craving food items like dirt, flour, cornstarch, ice chips, or paint chips
    - Bruising
    - Hair loss
    - Cheilitis (sores, cracking around the lips)
- **What's needed for iron absorption:**
    - Acidic environment
    - Gastric mucosa
    - Enough iron in diet (ie: meats and leafy green vegetables)
- **Conditions leading to iron deficiency:**
    - Menstruation
    - Microscopic loss from the GI tract
        - Malignancy
        - Barrett's esophagus
        - Hiatal hernias
        - Gastric or duodenal ulcers
        - Arterial venous malformations in the gut
        - Polyps in the colon
    - Gastric bypass
    - Inflammatory bowel disease
    - Celiac
    - Pregnancy
    - Chronic stomach acid suppression
- **Diagnosis:**
    - Complete blood count
    - Ferritin (low)
        - May be low normal before you see anemia
        - Less than 50 + fatigue warrants trial of iron
        - Acute phase reactant that may be elevated for many other reasons
    - Serum iron (low)
        - Affected by what you ingested the day of your blood draw (ie: hamburger, multivitamin)
    - Total iron binding capacity (elevated), Transferrin (elevated), Percent saturation (low)
        - Most reliable thing on the panel that is low in iron deficiency
- **Treatment:**
    - Pearl: You won't do harm by trialing iron to see if it makes them better as long as you are keeping ferritin under 500
    - Monitor 6-8 weeks afterwards with ferritin and hemoglobin because the serum measurements will change based on the iron treatment but don't reflect whether or not it is effective
    - Goal: keep ferritin > 50
    - Oral iron
        - Iron every other day improves absorption with less GI side effects

        - Common side effects: constipation, nausea, diarrhea
        - Ferrous sulfate is most effective but most constipating
        - Ferrous gluconate is a second-line
        - Take with vitamin C pill or glass of orange juice
        - Space out from PPI or H2-blocker by about 12 hours
        - Don't take calcium-containing foods a few hours before and after the iron pills
            - Pearl: be careful of the orange juice supplemented with calcium
        - Taking with food is fine
    - IV iron
        - Pros: works more quickly or for those who won't absorb through the gut
        - Cons: more expensive, may have life-threatening allergic reaction
        - Many formulations:
            - Ferumoxytol - given a week apart two times, well-tolerated, expensive
            - Iron sucrose - most widely used, life-threatening allergy < 1%; three times a week x 2 weeks
                - Max 300mg in one sitting
    - Pearl: If you feel like you have to replete more frequently than you'd expect and have yet to find a source, consider repeat GI testing because the first round may not have captured the bleeding at the time

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Efficiency & Time Management in Clinic

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Pearls:

- **Some tips for time management as a primary care provider in clinic:**
    - Visit prep
    - Agenda-setting
    - Documentation (not perfect, during the visit)
    - Batching tasks
    - Delegating tasks to team members

- Before visit prep - review the chart, see what labs are due, remind yourself of the last visit what you talked about, create your agenda
    - Different providers will do this at different times (the day before, the visit before, two weeks before)
- Agenda-setting - "What's on your agenda today?"
    - Will vary by patient but some sort of framing of the visit is helpful to keep the visit from expanding
    - Getting all the issues out at the beginning with open-ended questions like "What else?"
    - Remember that we have time to get through the list, so we don't have to fit everything into the visit
- Documentation -
    - Set up the room so that you can document and talk at the same time
    - If possible document during the visit
    - Making initial eye contact is crucial to establishing that connection
    - Let go of the perfect prose and verbose notes → bullet points are just fine
    - Leave breadcrumbs for yourself like a list at the end of your note with items for the next visit
- Outside of clinic -
    - Plan ahead about when you'll have time to get things done so you don't have to bring so much work home
    - Try to do as much as you can in the office
    - Pick your priorities and be disciplined about setting boundaries
    - Set small time frames of working on a particular task (ie: from 10-11am working on inbox from patients)
    - Batching - do the same type of work in bundles (ie: emails, notes, labs)
    - Delegate work where appropriate to other team members

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HELLP Syndrome

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Pearls:

- **HELLP is characterized by hemolysis, elevated liver enzymes and low platelets; however, about 10-20% have neither elevated blood pressure nor proteinuria.**
- **While it usually occurs between 27-37 weeks gestational age, up to 30% occur postpartum and can occur before 27 weeks.**
- **Delivery is treatment and vagina delivery is preferred. Don't forget betamethasone before 34 weeks to accelerate fetal lung maturation.**

- **HELLP:** considered a variant of severe preeclampsia (reviewed PCRAP June 2015 and December 2018) and pregnancy-induced hypertension
    - **1. H**emolysis
        - Red cells get hemolyzed as they move through the endothelium leading to low Hb/Hct, high LDH that gets released from cells and high reticulocyte count as body compensates
    - **2. E**levated **L**iver enzymes
        - Combination of obstruction of blood flow due to fibrin deposits that may become so severe it leads to intrahepatic rupture and even hepatic rupture
    - **3. L**ow **P**latelets
        - Increased platelet destruction in the vasculature
        - Pearl: most reliable development of HELLP
    - Can also have partial HELLP with only one or two findings
- **Pathogenesis:**
    - Unclear - some sort of trigger leads to microvascular endothelial damage and intravascular platelet activation
- **Epi:**
    - 1.1% mortality rate for mother
        - 25% of mothers with HELLP will develop other complication such as placental abruption, acute respiratory distress syndrome, pulmonary edema and hepatic failure or rupture
    - 10-60% mortality rate for infant
        - Infant also more likely to develop intrauterine growth retardation and respiratory distress syndrome
    - Tend to occur in 27-37th gestational week
        - 30% can happen after delivery
- **Signs and Symptoms:**
    - Headache
    - Visual symptoms in about 20%
    - Excessive weight gain and generalized edema
    - Epigastric pain
    - RUQ pain
    - Nausea/vomiting
    - Elevated blood pressure and proteinuria
        - Pearl: 10-20% of cases may not have either finding
- **Treatment:**

    - Delivery:
        - 1. >34 weeks, immediate delivery
            - Vaginal delivery is still ok and preferred
        - 2. 27-34 week, aim for delivery in 48 hours
            - Betamethasone 12mg q24 hours x 2 for fetal lung maturation
        - 3. <27 weeks, conservative management (bedrest, IV fluids, blood pressure control, close observation of mother and baby) for as longa s possible
            - Betamethasone 12mg q24 hours x 2 for fetal lung maturation in anticipation of delivery
    - Antihypertensives
        - Goal 140/90, below 160/110
    - Magnesium sulfate
- **Post-delivery HELLP:**
    - Risk of renal failure and pulmonary edema is actually higher
    - Dexamethasone 10mg q12 hours may help accelerate recovery for these cases
    - If elevated bilirubin or creatinine for >72 hours after delivery, may benefit from FFP
- **Prevention:**
    - Aspirin 81mg at 12 weeks in subsequent pregnancies per USPSTF for women at increased risk of preeclampsia
        - For women with HELLP, 20% risk of at least some form of gestational hypertension
    - Also increased risk of hypertension and cardiovascular disease long-term

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Medicare Annual Wellness Visit

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Pearls:

- **The Medicare Annual Wellness Visit is actually 3 different types of visits (G0402, G0438, G0439) that focus on health prevention through gathering of personal and medical data along with cognitive screenings and health education.**
- **They are best completed using checklists, templates and team-based care.**

- **What is the Medicare Annual Wellness Visit?**
    - Introduced in 2011 as part of Medicare Part B expansion the Affordable Care Act
    - Encourage preventive care and promote age appropriate risk modifying screenings and assessments
    - No data yet that it changes morbidity or mortality outcomes but some data that it increases access to screening services
    - Three different types of exams covered by Medicare that are wellness visits:
        - 1. Initial preventive physical examination (IPPE) (G0402): covered only once and must be done within 12 months of being enrolled in Part B of Medicare
            - Pearl: Must include a visual acuity screen
        - 2. Annual wellness visit (G0438): at least 12 months after the IPPE
            - If they miss their IPPE, this visit will be their first Medicare visit
        - 3. Subsequent annual wellness visit (G0439): at least 12 months apart (not following a calendar year)
            - A routine physical is not covered by Medicare
- **Tips for these visits:**
    - Standardized approach with a checklist
    - Team-based approach
        - Pre-visit planner who talks to patient beforehand to get all the pieces of information
        - Coordinate with other members who are gathering information to reduce duplicating efforts
    - Advise patients to bring their records (immunizations, family history)
    - Bring in medications
    - List of physicians and suppliers providing care to patient
    - Pearl: Due to billing and Medicare policies, warn patients that there may be some out-of-pocket expense because the annual visit may not cover some lab testing if something else comes up in the visit
    - Note templates in the EMR can be helpful
    - Use the After Visit Summary (AVS) to provide patients with the necessary components
    - Many can do this visit: NP or PA, certified clinical nurse specialist, a health educator, a registered dietician, a nutrition professional, or a team of medical professionals
- **What is covered?**

    - IPPE:
        - 1. Health Risk assessment:
            - Demographic data
            - Assessment of health status
            - Psychosocial risk factors
            - ADL and IADLs
        - 2. Medical, surgical and family history
        - 3. Current providers and suppliers
        - 4. Routine measurements (height, weight, blood pressure)
            - Visual acuity screen
        - 5. Cognitive impairment (MMSE, MOCA, etc.) beyond AAOx3
        - 6. Reviewing risk factors for depression or other mood disorders
        - 7. Establish appropriate screening schedule and give to them
        - 8. Provide health advice and referrals to health education or mental health resources
        - 9. Health education and preventative counseling
    - Annual well visit:
        - Review and update components of the IPPE
- **What is not included or required in the visit?**
    - Physical exam
    - Advanced care planning
    - Addressing other medical problems
        - You may have to bill separately for these by adding CPT modifiers
        - FQHC has different stipulations

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Breast Cancer Chemoprophylaxis

Molly Heublein MD

Pearls:

- **Recent guideline updates from USPSTF recommend SERM or AI for those women at increased risk of breast cancer (greater than 3% in 5 years).**
- **However, there are no good tools for risk evaluation and there are potentially significant side effects like uterine cancer (tamoxifen only) and thromboembolic events with SERMs.**

- **Breast cancer chemoprophylaxis recommendations:**
  - Recent changes in September 2019 updating the 2013 guidelines from USPSTF
  - Women at increased risk of breast cancer (at least 3 % in 5 years) should be offered chemoprophylaxis to reduce their risk (Grade B).
    - Old guidelines recommended selective estrogen receptor modulators (SERM) like Tamoxifen and Raloxifene.
    - New guidelines recommend those but also expand to offer women aromatase inhibitors (AI) like anastrozole and exemestane.
  - No benefit for women at average risk
  - Does not apply to women < 35 and does not apply to those diagnosed with breast cancer or have BRCA mutation
  - Does apply to women with a history of benign breast biopsies
- **Medication review:**
  - SERM: bind selectively to estrogen receptors and in different tissues have agonistic and antagonistic effects

        - Tamoxifen and raloxifene are very strongly anti-estrogen so prevent estrogen-sensitive breast cancers from developing
            - Best in premenopausal women because there is more estrogen circulating around
        - Both also have estrogenic effects on the bones and lipids
        - Tamoxifen has pro-estrogenic effects in the uterus
        - Raloxifene does not have pro-estrogenic effects in the uterus
        - Reduce breast cancers by about 7-9 per 1000 but have not yet shown they impact mortality (cancer-specific or all-cause)
    - AI: block the enzyme that converts androgens to estrogens
        - Work best in post-menopausal women because there is less estrogen around from the ovaries
        - Reduce breast cancers by about 16 per 1000 but have not yet shown they impact mortality (cancer-specific or all-cause)
- **Side effects:**
    - SERM:
        - Vasomotor symptoms and musculoskeletal symptoms like myalgias and arthralgias
        - Increased risk of uterine/endometrial cancer and cataracts with tamoxifen
        - Slight increased risk of thromboembolic events like DVTs, PEs and strokes
        - Both decrease the risk of osteoporotic fractures
    - AI:
        - Vasomotor symptoms, GI upset, musculoskeletal pains
        - No increased risk of uterine cancer or thromboembolic events
        - Increase osteoporotic fractures
- **Assessing Risk:**
    - None of the models work great on an individual level
    - Some to try:
        - Gail Model
        - Tyrer-Cuzick Model
        - Breast Cancer Surveillance Consortium Model
    - USPSTF encourages use of clinical judgement to determine risk
        - Age
        - First degree relative
        - Biopsy history
        - Chest wall radiation in childhood
- **Why not BRCA patients?**
    - BRCA1 mutations tend to lead to cancers that are estrogen receptor negative so the medications don't have any effect
    - Not enough data on BRCA2 patients

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MAILBAG: Bell's Palsy

Jay-Sheree Allen MD, Neda Frayha MD

Pearls:

- **Bell's palsy is an idiopathic facial nerve palsy leading to weakness/paralysis on one side of the face.**
- **If the forehead is involved, you can rule out stroke.**

- **Question: How do you distinguish Bell's palsy from stroke?**
    - Bell's Palsy: idiopathic acute peripheral nerve palsy of the facial nerve that results in muscle weakness on one side of the face
        - Peak incidence is 5th decade of life
        - Men = women
        - Increased risk with diabetes, third trimester and first postpartum week
    - Symptoms:
        - Weakness or paralysis on one side of the face
        - Acute over hours
        - May also have numbness and can affect taste and tear production
        - Pearl: Facial sensation is NOT affected
        - Pearl: If forehead is involved, you can rule out stroke (See AAFP article below for great diagram)
    - Treatment: unclear if/how they work but generally these are tried
        - Prednisone
        - Antivirals like acyclovir or valacyclovir
        - Not role for surgery for nerve decompression anymore
    - Prognosis:
        - Milder the severity the more likely the recovery
        - 85% improve within 3 weeks

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Paper Chase #1 - Efficacy of Gabapentin for the Treatment of Alcohol Use Disorder in Patients With Alcohol WIthdrawal Syndromes

Tom Robertson MD, Steve Biederman MD

Anton RF, Latham P, Voronin K, et al. Efficacy of Gabapentin for the Treatment of Alcohol Use Disorder in Patients With Alcohol Withdrawal Symptoms: A Randomized Clinical Trial [published online ahead of print, 2020 Mar 9]. JAMA Intern Med. 2020;180(5):1–9. doi:10.1001/jamainternmed.2020.0249

Pearls:

- **Gabapentin was most efficacious in patients with AUD and h/o alcohol withdrawal symptoms.**

- **Objective:** To examine whether gabapentin would be useful in the treatment of AUD, including alcohol withdrawal
- **Method:** Placebo controlled, randomized controlled trial of Gabapentin versus placebo for 16 weeks
    - Outcomes: number of heavy drinking days, abstinence, withdrawal symptoms
    - Exclusion criteria: major depression, bipolar, CIWA > 10
- **Results:**
    - 90 patients with ADU and h/o alcohol withdrawal symptoms randomized
    - Decreased heavy drinking in 27% gabapentin v. 9% placebo
    - Abstinence in 18% gabapentin v. 4% placebo
    - Benefit primarily in those with severe AUD
- **Bottomline:** Gabapentin was most efficacious in patients with AUD and h/o alcohol withdrawal symptoms

Paper Chase #2 - Factors Associated with Differential Readmission Diagnoses Following Acute Exacerbations of Chronic Obstructive Pulmonary Disease

Tom Robertson MD, Steve Biederman MD

Buhr RG, Jackson NJ, Dubinett SM, Kominski GF, Mangione CM, Ong MK. Factors Associated with Differential Readmission Diagnoses Following Acute Exacerbations of Chronic Obstructive Pulmonary Disease [published online ahead of print, 2020 Feb 11]. J Hosp Med. 2020;15(2):e1–e9. doi:10.12788/jhm.3367

Pearls:

- **30-day readmissions following COPD exacerbation are common and more than half the time they are attributable to non-COPD diagnoses.**

- **Objective:** To investigate readmission characteristics following hospitalizations for COPD exacerbations
- **Method:** Retrospective analysis of COPD discharges from 2010 to 2016, where they were reevaluated for readmission odds, for COPD readmissions versus non-COPD readmissions
- **Results:**
    - 1.6 million hospitalizations
    - 17.25% were readmitted with 30 days and more than half were diagnoses other than COPD
    - Those readmitted were more likely to be younger, have fewer comorbidities and have shorter lengths of stay
    - Significantly higher rates of heart failure and renal failure in those readmitted for non-COPD reasons
- **Bottomline:** 30-day readmissions following COPD exacerbation are common and more than half the time they are attributable to non-COPD diagnoses

Paper Chase #3 - A Randomized Controlled Trial of Liraglutide for Adolescents with Obesity

Tom Robertson MD, Steve Biederman MD

Kelly AS, Auerbach P, Barrientos-Perez M, et al. A Randomized, Controlled Trial of Liraglutide for Adolescents with Obesity. N Engl J Med. March 2020. doi:10.1056/nejmoa1916038

Pearls:

- **Liraglutide led to increased weight loss compared to placebo, but the effect was not sustained after discontinuation of the medication.**

- **Objective:** To assess the efficacy of liraglutide as a weight loss medication in adolescents
- **Background:** Obesity is a huge problem and kids are not spared - 70% of kids who are obese suffer with it into adulthood.
    - GLP-1 agonists reduce glucagon secretion to augment insulin levels, to delay gastric emptying and reduce appetite with ideally subsequent weight loss
- **Method:** Randomized double blind placebo controlled 56-week trial of the GLP1 agonist liraglutide among adolescents 12-17 years of age with morbid obesity not responsive to lifestyle changes. Followed for 26 weeks after discontinuation of medications.
    - Outcomes: weight loss, side effects
    - Industry-sponsored
- **Results:**
    - Liraglutide group: greater reduction in BMI, no difference in quality of life scores or adverse events (GI side effects were more common)
    - Average wt loss for liraglutide v. placebo was 4.5kg
    - After discontinuation and 26 week follow-up, outcomes were even
- **Bottomline:** Liraglutide led to increased weight loss compared to placebo, but the effect was not sustained after discontinuation of the medication

Paper Chase #4 - Apixaban for the Treatment of Venous Thromboembolism Associated with Cancer

Tom Robertson MD, Steve Biederman MD

Agnelli G, Becattini C, Meyer G, et al. Apixaban for the Treatment of Venous Thromboembolism Associated with Cancer. N Engl J Med. 2020;382(17):1599–1607. doi:10.1056/NEJMoa1915103

Pearls:

- **Apixaban was noninferior to subcutaneous dalteparin for the treatment of cancer-associated venous thromboembolism without an increased risk of major bleeding.**

- **Objective:** To evaluate the safety and efficacy of apixaban for the treatment of cancer-associated venous thromboembolism
- **Method:** Multinational randomized controlled open-label non-inferiority trial with blinded adjudication of the outcome and it was industry sponsored
    - Outcome: recurrent venous thromboembolism and major bleeding
- **Results:**
    - 1200 patients
    - Recurrent VTE in 8% dalteparin v. 5.6% apixaban
    - Major bleeding ~4% in both groups
- **Bottomline:** Apixaban was noninferior to subcutaneous dalteparin for the treatment of cancer-associated venous thromboembolism without an increased risk of major bleeding

Paper Chase #5 - Multicenter Emergency Department Validation of the Canadian Syncope Risk Score

Tom Robertson MD, Steve Biederman MD

Thiruganasambandamoorthy V, Sivilotti MLA, Le Sage N, et al. Multicenter Emergency Department Validation of the Canadian Syncope Risk Score [published online ahead of print, 2020 Mar 23]. JAMA Intern Med. 2020;180(5):1–8. doi:10.1001/jamainternmed.2020.0288

Pearls:

- **The CSRS was validated and may aid in short term risk stratification of pts presenting with syncope.**

- **Objective:** To validate the CSRS and determine its ability to predict 30-day serious outcomes
- **Background:** CSRS is a score from -3 to 11 based on three categories for a total of nine criteria
    - 1. Clinical evaluation
        - Prodrome
        - History of heart disease
        - Systolic blood pressure <90 or >180
    - 2. Investigations
        - Elevated troponin
        - Abnormal axis on ECG
        - Wide QRS
        - Long QTc
    - 3. Final diagnosis
        - Vasovagal syncope
        - Cardiac syncope
- **Method:** prospective multicenter cohort study across 9 ED's in Canada that followed patients for 30 days after discharge

- **Results:**
    - 3800 participants
    - 3.6% experiences some adverse event, majority were arrhythmias
    - 0.3% died
    - If low CSRS score: 0.4% had adverse event and none died
- **Bottomline:** The CSRS was validated and may aid in short term risk stratification of pts presenting with syncope