Research Day 2020
Texas Tech University School of Medicine at the Permian Basin

Abstracts

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Clinical Research

1. TTFM Free STI Clinic: A Community Quality Improvement Project

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Background: Rates of gonorrhea (GC) and chlamydia (CT) in Ector County are higher than Texas and USA. With expensive STI laboratory costs, patients cannot afford recommended screening. With the highest prevalence of STIs being in 15-24-year-olds, it is a challenge for at risk persons to find time to be evaluated.
Objective: To plan, organize, and execute TTFM STI Clinic. To compare data from DSHS versus TTFM STI Clinic for screening period from December 2019 to March 2020.
Methods: Community quality improvement project. Free TTFM STI Clinic established on Saturdays. Subjects ≥ 15 years of any of any gender, race, and ethnicity, who walk-in voluntarily. Urine/blood samples collected after patient consent and screened for gonorrhea (GC), chlamydia (CT), HIV, and syphilis. Data includes age, gender, race, ethnicity, symptoms. Samples sent weekly to DSHS Austin. Results given to patient via telephone. Treatment given with DSHS provided medication. Syphilis referred to ECHD.
Results: One-hundred subjects screened; 35% males, 65% females. Twenty-four subjects positive; CT accounted for 16.4%, GC8.2%, syphilis 3%, HIV 0%. Fifty-one were 15-24 years; 33.3% positive for ≥ 1 STI; one positive for CT/syphilis, one for GC/CT. Four patients ≥ 45 years tested negative. Seventy-five Hispanics, 25.3% positive. Eight GC positives, including four Caucasian males. Two pregnant women, one positive for CT. Half reported symptoms.
Conclusions: One in four positive for STI(s); CT being greater than GC, GC greater among Caucasian males. Females and Hispanics were highest in getting screened. 15-24-year-olds had highest incidence of positives.

2. Telehealth in Medical School Curriculum: Introducing, Teaching, and Training Telemedicine

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Background: Telemedicine continues to become common practice in all areas of healthcare, especially rural medicine, from emergency triage to outpatient follow-up. As telemedicine rapidly evolves, telehealth has the potential to lag behind in areas such as provider training, continuing medical education, and medical school education. Most recent data from the AAMC in 2018 demonstrates that the curricula of only 44% of medical schools provided telemedicine training. Currently, TTUHSC curriculum for medical students does not formally include telemedicine. Since the School of Medicine serves the surrounding rural areas of West Texas, it is imperative to integrate telehealth as one of the mainstays to medical education.
Objectives: Introduce telehealth into the curriculum, educate on telemedicine applications and tools, and to train students in telemedicine.

Materials and Methods: Students were given lectures, demonstrations, and standardized patient encounters in telehealth. Students were subsequently trained with telemedicine using standardized patient. Tools such as a dermatoscope, remote stethoscope, and mobile phone app were used to emphasize" telepresence." Understanding and comfort of using telemedicine was gauged using a Likert scale in 11 medical students before and after the elective. Students were asked if they Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), or Strongly Disagree (SD) with statements regarding understanding in applications of telemedicine in several medical disciplines, comfort in use, and desire to have in medical school education, and future use.
Results: Pre-survey: Respondents selected. Overall, SA was never a majority for any of the any statements regarding understanding applications or fundamentals of operation, but 1/3rd of all respondents SA that they wanted more telemedicine education or plan to use in their career. For the post-survey results, all respondents "agreed" or "strongly agreed" for all statements, with 82% of respondents or higher selecting SA.
Conclusions: Before education and training, most students indicated consensus on the lack of practical knowledge in telemedicine, but all students indicated interest in future incorporation of telemedicine into their practice. From the results gathered, the interest in using and learning telemedicine is present and necessary to incorporate into medical education. With better training for medical students integrated into institutional settings, the disparity and lack of access to care can be met.

3. Efficient Management of Message Center

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Background: The EMR message center is a tool that allows communication with providers and residents in important areas for efficient and quality services delivery such as reviewing laboratories, ordering or refilling prescriptions, assessing quality, reviewing external documentation and messages sent from other practices or providers, identifying and correcting documentation inquiries and assuring the completion of saved documents relevant for patient care. Currently, residents at the outpatient clinics are not efficiently managing their message center, and this happens mainly during their rotation changes and in between scheduled clinic breaks. During the period of 7/1/2018 to6/30/2019 there were 215 unopened items in the message center of eight (8) Texas Tech Residents attending the TT outpatient clinic in Midland, from those items, 95 of them were prescriptions that needed to be refilled or corrected, 29 laboratory results that needed to be reviewed and the rest were direct messages including coding queries. This disrupts patient services delivery and continuity of care as well as patient satisfaction.

The management of residents' message centers has not been investigated and it represents an important piece of the optimized utilization of the electronic medical record systems. In addition to improving quality of care, we believe that project will also help residents work efficiently in their practices after graduation and avoid suspensions or liability issues. By efficiently managing the message center we will be contributing to optimizing communication between the residents and other healthcare personnel (nurses, coders, attendings, specialists),minimizing patient risks by opportunely identifying abnormal laboratories and taking actions to correct the abnormalities, improving health services delivery by facilitating the opportune delivery of prescriptions and refills, improving patient satisfaction by delivering and appropriate follow up to the consults and improving patient safety. Objectives: To achieve less than 5 unopened items per resident per month in the TTUHSC IM Residents' Cerner message center in 10 weeks.

To achieve at least a 50% reduction of the unopened items of the message center of the TTUHSC IM Residents.

Material and Methods: Time duration of the study is 10 weeks. Variable being investigated longitudinally through the study is the number of unopened items in the resident´s message center. Define: This will include delineation of responsibilities, allocation of time frame and collection of baseline data for the clinics number of unopened items in the resident's message center. Measure: IT personnel will run weekly reports of unopened items that will be presented in excel sheets. Weekly statistics of the unopened items will be tabulated in excel, will be tabulated in a bar chart /histogram. Means and SD will be calculated at 4 weeks, 8 weeks and 10 weeks of the project. Analyze: Project leader, project coordinator + residency program director will review reports to identify causes of unopened inbox messages at resident faculty meeting.

Improve:

Structured training workshops for residents to address inbox queries.

Modification of Cerner opening page to the inbox to enforce inbox review.

Weekly reminders to the residents who have unopened items in their message centers.

Program leadership defining disciplinary remediation plan for those residents who continue to be negligent despite reminders.

Control: A multi-disciplinary team meeting will be conducted to review progress and formulate interventions to develop a policy that can be permanently implemented in the Clinics. After implementation of the interventions, the trend in the monthly unopened message center items will help assess their impact.

Results: Preliminary results: There were 1065 unopened items in the message center of 46 residents (average 26 messages per resident) at the beginning of the intervention. Intervention was started on November of2019 with an email reminder to residents (intervention #1), changes were measured at the end of the month obtaining a 15% reduction from the baseline. Intervention was suspended during the holidays and a new measurement was obtained in December of 2019, finding 997 items (6% less than the baseline). A second email reminder was sent in January 15th and the landing page of the residents' EMR was changed from the schedule to the message center (Intervention#2), obtaining a 64% reduction from the baseline. A lecture was given to residents on message center management (Intervention #3), results from this intervention will still need to be quantified.

Conclusions: It is important for TTUHSC Permian Basin Outpatient Internal Medicine (IM) clinics to execute ongoing strategies that allow the efficient maintenance of the EMR message center among Texas Tech residents, facilitating the reduction of unopened items in the message center such as laboratories, refill requests, prescriptions or coding queries, and in this way improving continuity, quality of care, and patient safety.

4. Effectiveness of Gabapentin in Reducing Cravings and Withdrawal in Alcohol Use Disorder: a Meta-Analytic Review

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Background: effect of gabapentin on alcohol withdrawal and craving.

Objectives: The current meta-analysis synthesizes previous findings on the effect of gabapentin on alcohol withdrawal and craving.

Material and Methods: Using the PRISMA methodology, a search for relevant English- literature published between January 1999 and February 2019was conducted using PubMed and Google Scholar with the key words alcohol use disorder, alcohol dependence, alcohol withdrawals, alcohol craving, "gabapentin in alcohol use, consumption," and "gabapentin in alcohol withdrawals." Studies were included wherein gabapentin was used as an adjunctive or primary treatment of alcohol dependence/withdrawal. participants diagnosed with alcohol use disorder using DSM-IV, DSM-IV-TR, DSM-5, or the ICD-10. Following the review of the initial 65 returns, 2 authors independently judged each trial by applying the inclusionary and exclusionary criteria, and any remaining disagreements were resolved by involving a third independent author. A total of 10 studies met the inclusion criteria and were selected for analysis. Subjects in these 10 studies were pooled using standard techniques of meta-analysis.
Results: Three sets of meta-analyses examined outcomes from (1) single-group pretest-posttest changes, (2) posttest differences between independent groups, and (3) differences in pretest-posttest change scores between independent groups. Statistically significant effect sizes were found for craving ($P < .01$) and withdrawal ($P < .01$, $P < .001$) in the meta-analysis of single-group pretest-posttest outcome changes and were associated with a high level of heterogeneity. In contrast, the meta-analyses of posttest differences between independent groups—that of differences in pretest-posttest change scores between independent groups—did not yield significant effect sizes.
Conclusions: Our analysis of pooled data provides evidence that the use of gabapentin to manage alcohol withdrawal symptomatology and related cravings is at least moderately effective. However, given the limited number of available well- designed studies, these findings require further support through more rigorously designed studies.

5. To Cool or not to Cool: Effect of Therapeutic Hypothermia in Prevention of Long-Term Sequelae of Anoxic Brain Injury in Near Hanging Victims

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Background: Hanging is one of the most common methods of suicide in the United States, second only to firearm use, resulting in approximately 10,000 annual deaths. This is a problem that generally affects younger age groups and estimated mortality is around 77% to 84%. Hanging is a form of strangulation where pressure is applied to the neck by a constricting band tightened by the gravitational pull of body or body-part weight. This compression results in jugular venous and carotid arterial obstruction leads to loss of consciousness, cerebral hypoxia, airway obstruction and ultimately death. This vessel occlusion, as well as hypoxemia, carotid sinus stimulation and increased vagal tone are thought to cause cardiac arrest (CA). Hypothermia is thought to reduce post-CA ischemia-reperfusion injury and targeted temperature management (TTM) has been shown to improve survival and neurological outcomes of CA survivors. There have been small retrospective studies and case reports but despite this the effect of TTM on CA induced by hanging remains unknown. We believe that TTM can improve the neurological and survival outcomes of patients who suffered hanging-induced CA.
Objectives: We will perform a chart review from January 2014 to March 2020 of patients admitted to Midland Memorial Hospital in Midland, TX and Medical Center Hospital in Odessa, TX after near hanging suicide that were treated with therapeutic hypothermia. Data will be analyzed, and descriptive statistics will be obtained.

Material and Methods: A chart review of the electronic medical record (EMR) of Midland Memorial Hospital (MMH) and Medical Center Hospital (MCH) from the years 2014 to 2020 will be conducted. Patients will be included if their admission diagnosis was near hanging suicide and were treated with a therapeutic hypothermia. Therapeutic hypothermia (TH) is defined as cooling of the core bod temperature to 32-34 degrees Celsius or 36 degrees Celsius in modified TH for 24-72 hours using external cooling devices (i.e. Arctic Sun). Survival will be defined as the patient being alive after conclusion of TH and neurological outcomes were measured using the Cerebral Performance Category (CPC) score on discharge.
Results: Pending.
Conclusions: Pending.

6. How Attention deficit hyperactivity disorder (ADHD) and Internet gaming disorder (IGD) are related in children and youth; A literature review

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Background: Internet use and Internet gaming have grown substantially over the last decade. Presently, children and youths seem to spend more time in front of the screen playing games than in interacting socially. In the USA, about 17% of males and 11% of females under age 18 play video games. There is a growing concern that excessive Internet use and gaming could negatively impact the physical health, psychological development and social-interpersonal functioning of these young people.
Objectives: This review will address five clinical questions:
Is IGD more common in children/youths with ADHD vs without ADHD?
In children that initially have ADHD without IGD, what proportion will go on to develop IGD? And when in the course of ADHD would IGD be expected to develop?
Do social skills influence the development of IGD in ADHD youth patients?
Does IGD get better with effective ADHD treatment?
Are any personal, clinical, demographic, familial or other environmental factors associated with a greater risk of developing IGD in children with ADHD?
Material and Methods: A literature search of four databases: PubMed, Scopus, PsychInfo, and Embase. Total hits 276 out of which 86 articles reviewed; out of which 20 articles were relevant for our review.
Results: Youth with ADHD are at greater risk for developing IGD than those without ADHD. Close association between the severity of both ADHD and IGD symptoms. Both conditions share a common mechanism and sensitization that is mediated by dopamine. Video games seem to activate the brain's dopamine reward system, causing dopamine release during exposure. Have greater social skills deficits than those with ADHD and no IGD. ADHD treatment is effective in treating IGD co-morbidity. Sever IGD is associated with Lower paternal occupational socioeconomic status and less satisfactory family relationships.
Conclusions: IGD is an increasingly recognized condition that is a special risk for persons with ADHD. Youths with ADHD and IGD had greater social skills deficits than those with ADHD and no IGD. Treatment of ADHD also helps with IGD symptoms severity.

7. Use of Lamictal in Agitation in Dementia

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Background: The incidence of dementia increases with the increasing age and is characterized by cognitive decline. Agitation, aggression, psychosis could be the manifestation of dementia, especially in later stages. It is imperative to treat behavioral issues associated with dementia. There are two ways of treating agitation, behavioral and pharmacological. Behavioral techniques can be useful earlier, but later aggression often needs pharmacological treatment. Pharmacological treatment of aggression associated with dementia can be very challenging due to multiple medical comorbidities which include long Qtc etc. especially when it comes to treating with antipsychotics. In these challenging cases, mood stabilizers could be helpful without causing many side effects. Lamotrigine is a mood stabilizer, which causes repolarization, by increasing potassium outflow and blocking voltage-dependent sodium/ calcium channels. It also has neuroprotective effects and reduces glutamate.
Objectives: To look for the better tolerable medication for agitation in dementia.
Material and Methods: Using search terms, (("lamotrigine" OR "Lamictal" OR "mood stabilizers" OR “antiepileptic medications”) AND agitation) AND ("dementia" OR "dementia" OR “Alzheimer’s dementia” OR “vascular dementia”), a systematic review was conducted. Databases like PubMed, PsycINFO, and Embase were used. Inclusion criteria: Randomized Controlled Trials (RCTs), Case reports, Open-label studies, Ages 50-90, Subjects should have a diagnosis of dementia due to any cause. Exclusion Criteria included: Studies focused on diagnosis other than dementia, Studies focused on treatments other than lamotrigine, Studies concentrate on the treatment of agitation due disorders other than dementia.
Results: We had 28 hits by searching in different databases. After title, abstract and full article review, 9 articles were included in our study. We found 3 review articles, 2 case series, 2 case reports, one retrospective review, and 1 open-label studies. The two-case series, which included 46 patients, showed improvement in 42 patients regarding agitation/ aggression reflected by Clinical Global Improvement (CGI), 2 case reports also showed beneficial effects of Lamotrigine on agitation associated with dementia. Another retrospective review included 2males and 3 females, showed beneficial effects on symptoms of mania associated with dementia. This study used 100-300 mg/dl of Lamotrigine in a day. Open-label trial was based on 16-week study and included 40 subjects with dementia. Scores on the Neuropsychiatric Inventory reduced in subjects who were taking Lamotrigine. Conclusions: Our review reflects the tolerability and effectiveness of Lamotrigine in agitation/ behavioral issues associated with dementia but also requires more studies to replicate these findings.
Discussion: Since a patient with dementia has many medical comorbidities, which include long Qtc, are vulnerable to hypotension, have metabolic syndromes, and in these circumstances, antipsychotics even at a lower dose can increase the side effects. Antipsychotics can also increase the risk of cardiovascular events in patients with dementia. This leads us to look more into the tolerability of mood stabilizers, specifically Lamotrigine. The limitation of this review is that most of the studies comprised of a very small sample size.

8. Evaluation of the Infrared Thermal Images of the Lower Extremities in the Framework of Study of Determination When to Return to Play After Sports Injuries

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Background: Over 30 million children under the age of 18 participate in organized sports in the US. About 3.5 million injuries which occur every year. Injury occurring at either practice or game setting, it is difficult to assess the safety of an athlete to return to play. Currently we use physical exam, the expertise of athletic trainers and other medical professionals to determine when to return to play. The question remains: Is there a better way to help athletic trainers and other medical professionals assess injury at the sideline in effort to better help safely decide safe return to play? Objectives of this feasibility study was to evaluate usefulness of thermal images for evaluation of sport injuries in athletes.

Material and Methods: In this prospective observational study (IRB # L19-030) we used FLIR-ONE (Forward looking Infrared camera) Systems, Inc, Wilsonville, Ore,) – smart phone-based technology. After informed verbal consent was obtained at the place of the athletic activities of UTPB, FLIR images of Region of interest (ROI) was done in their standing posture, during a rest or recovery period as baseline measurement. The ROI for our study was both the right and left knee and ankle (front, sides and back) of their lower extremities. The distance between the camera and the knee/ankle will be standardized to 30 cm using a ruler for each image taken.

Results: In order to determine the optimal distance to the ROI , preliminary experiment was performed with the stable heat source (36.3C), measuring temperature, using FLIR device at 5, 10, 15, 20, 25and 30 cm (39.04 ± 0.36, 38.12 ± 0.25, 37.8 ± 0.15, 37.46 ± 0.23, 36.98 ± 0.39, 37.08 ± 0.2 C respectively).The optimum distance of 30 cm was used to measure the thermal images of the ROI. The data, obtained from four male athletes prior to the game, (table 1) demonstrated temperature fluctuation between different anatomical areas of knee and ankles, however, there was no differences between knee and ankle/ left and right-side temperatures. The mean temperature at all sites were 33.6. (Table 2). There were no injuries during games for male and female athletes.

Table 1. Pre-Game FLIR Image Data – Males

Players (Male)	AR Knee	PR Knee	MR Knee	LR Knee	AL Knee	PL Knee	ML Knee	LL Knee	AR Ankle	PR Ankle	MR Ankle	LR Ankle	AL Ankle	PL Ankle	ML Ankle	LL Ankle
PB13M	33.4	34.1	35	33.2	333	34	34.8	33	35.3	32.5	33.9	32.7	35.2	32.3	33.1	33.1
PB25M	35.2	34.8	34.2	32.2	35.1	33.9	34.3	33.9	35.3	30.2	34.2	32	35	30.4	34.4	32.2
PM3M	29.8	35.3	33.9	33.5	30	35.1	34	33.2	35	32.1	33.8	33.8	35.3	32	33.9	34
4PB12M	30.1	35.2	34.1	33.8	29.9	34.8	34.2	33.9	35.3	33.2	33.8	34.5	35.1	33.1	33.9	34.4
Mean	32.125	34.85	34.3	33.18	32	34.45	34.33	33.5	35.23	32	33.93	33.25	35.15	31.95	33.83	33.43
Standard Deviation	2.62	0.54	0.48	0.69	2.52	0.59	0.34	0.47	0.15	1.28	0.19	1.12	0.13	1.13	0.54	0.98

Temperature is in Celsius for each joint. AR = anterior right, PR = posterior right, MR = medial right, LR = lateral right, AL = anterior left, PL = posterior left, ML = medial left, LL = lateral left.

Table 2:

Image site	Right	Left
Knee	33.7	33.6
Ankle	33.6	33.5

Conclusions: Detected with FLIR -ONE unaffected knee and ankle temperatures are in line with reported data (Medical & Biological Engineering & Computing (2018) 56:1115–1125): 31.47 (1.8) vs 33.6(1.08) in our study. These differences could be related, beside metabolic changes, to the ambient temperature and FLIR accuracy. The time required to obtain each image could be modified based on the reported results and could be applied for post-game injury assessment as next step.

9. Psychopharmacological Treatment of Pediatric PTSD: a Review of the Literature

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Background: Psychotherapeutic interventions are considered the first-line options for youth struggling with PTSD. However, pharmacological agents now are being used in this population, with evidence mostly inferred from adult literature. Hence, it is important to review existing evidence for the use of pharmacological agents in the pediatric population with PTSD.
Objectives: Early recognition and treatment of PTSD can improve the functional outcomes and prognosis for children and adolescents.
Material and Methods: Eight electronic databases were searched for studies on PTSD in children and adolescents. Keywords included individual medication names from antidepressants, mood stabilizers, antipsychotic drugs, a-adrenergic agents, beta blockers, serotonin and histamine antagonists, and opioid agonists. All books, conference papers, theses, editorials, review articles, meta-analysis, in vitro studies, laboratory studies, animal studies, studies including healthy subjects, and abstract-only articles were excluded. The screening of the articles was performed against the predetermined eligibility criteria.

Results: Thirty-two articles were included in the final review, comprising 8RCTs, 6 open-label trials, 2 chart reviews, 4 case series, and 12 case reports with a total patient population of 833. Review of the included studies revealed favorable evidence for the use of adrenergic agents, mood stabilizers, and second-generation antipsychotic drugs.
Conclusions: Although favorable evidence for the use of certain medication sexists among youth with PTSD, the adverse-effect profiles should be considered carefully when prescribing these agents. SSRIs should be used cautiously in patients with comorbid disorders because of limited evidence and an increased risk of adverse effects. There is a need for well-designed RCTs to assess the treatment of children and adolescents with PTSD.

10. Conduct Disorder-Related Hospitalization and Substance Use Disorders in American Teens

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Background: To the best of our knowledge, the characteristics of patients hospitalized with conduct disorder and their association with substance use disorders (SUD) has not been studied till date.
Objectives: Our study aimed to compare the demographic characteristics of conduct disorder (CD) inpatients versus other psychiatric inpatients in children and adolescents and assess the association between conduct disorder patients and the spectrum of substance use disorders (SUD).
Material and Methods: We included 800,614 psychiatric adolescent (12-18 years) inpatients, and this included 8885inpatients (1.1%) primarily for conduct disorder in the Nationwide Inpatient Sample (2010-

2014). ICD-9 codes were used to detect SUD, and a logistic regression model was used to evaluate the odds ratio (OR) for SUD in conduct disorder inpatients.
Results: A higher proportion of conduct disorder inpatients were of 12-15 years of age (62.6%), male (64.4%), and White (45.7%). The lower median household income was correlated with a higher prevalence of conduct disorder (36.4%). Among SUD, cannabis use (23.7%) was most prevalent in conduct disorder inpatients followed by tobacco and alcohol use (10.1%each). Conduct disorder inpatients have 1.7-fold higher odds (95% confidence interval (CI)1.52-1.82) for alcohol use and 1.4-fold higher odds (95% CI 1.31-1.49) for cannabis use compared to the non-conduct disorder inpatients. Cannabis use was seen significantly in adolescents (49.1%, 12-15 years), male (75.6%), and African Americans (45.6%).
Conclusions: Conduct disorder inpatients have a higher risk of co-morbid SUD compared to other psychiatric illnesses. The most common substance to be abused is cannabis followed by tobacco and alcohol. Varying pattern of substance use was seen by demographics and these predictors may help the clinicians for early diagnosis and treatment to improve overall health-related quality of life.

11. Analysis of Risk Factors and Outcomes in Psychiatric Inpatients with Tardive Dyskinesia: a Nationwide Case-Control Study

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Objectives: To analyze comorbidities and outcomes in patients with tardive dyskinesia (TD) during psychiatric inpatient management.
Material and Methods:
We conducted a case-control study using the Nationwide Inpatient Sample. It included77,022 adult inpatient admissions for mood disorders and schizophrenia. Cases had a secondary diagnosis of TD, and controls without TD were matched for age. Multivariable logistic regression was used to generate odds ratio (OR).
Results: Majority of TD patients were older age adults (50-64 years; 40%) and were in nearly equal proportions of men and women. African Americans had two-fold higher odds of TD. TD patients had a higher likelihood for cardio-metabolic comorbidities-obesity (OR 1.61, 95%CI 1.481-1.756), hypertension (OR 1.78, 95% CI 1.635-1.930) and diabetes (OR 1.54, 95% CI1.414-1.680) compared to controls. They also had 1.5-fold increased risk of comorbid drug abuse. Patients with schizophrenia and bipolar disorder (depressive) had four-fold higher odds of TD. TD patients had about six-fold higher odds of severe morbidity. They had a higher likelihood of extended hospitalization stay by 6.36 days (95% CI 6.174-6.550) and higher cost by $20,415 (95% CI 19537-21293) compared to controls.
Conclusions: Psychiatric inpatients with TD have greater severity of illness, and those with schizophrenia and bipolar disorders are at highest risk. Presence of TD portends poor hospital outcomes and need for higher acute inpatient care.

12. Primary Causes of Hospitalizations and Procedures, Predictors of In-hospital Mortality, and Trends in Cardiovascular and Cerebrovascular Events Among Recreational Marijuana Users: A Five-year Nationwide Inpatient Assessment in the United States

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Background: Recent trends in the legalization of marijuana in many states are increasing the popularity of recreational marijuana use. Since current data on hospitalizations in marijuana users is sparse, we evaluated the primary reasons for admissions, procedures and associated healthcare burden in hospitalized recreational marijuana users.
Material and Methods: The National Inpatient Sample (NIS) for the years 2010-2014 was queried for the hospitalizations with a history of recreational marijuana usage using applicable ICD-9 CM codes. Descriptive statistics were used to report frequency (N) and percentage (%). Discharge weights were applied to achieve national estimates. The predictors of in-hospital mortality in recreational marijuana users were assessed using a two-way hierarchical multivariate regression after adjusting for the confounders.
Results: We analyzed 465,959 (weighted n=2,317,343) hospitalizations with a history of recreational marijuana use. Among psychiatric disorders, most prominent primary discharge diagnoses were mood disorders (20.6%), schizophrenia/other psychotic disorders (10.6%), and substance/alcohol-related disorders (10.4%). Suicide and intentional self-inflicted injury (3.6%) was the leading cause of emergency admission. The most common non-psychiatric primary discharge diagnoses were diabetes mellitus with chronic complications (2.2%), acute myocardial infarction (AMI) (1.2%), nonspecific chest pain (1.1%), congestive cardiac failure (CHF) (1%), arrhythmia (0.8%), and hypertension (0.8%). Acute cerebrovascular diseases were noted in 1.1% and epilepsy in 1.8% of patients. Alcohol/drug rehabilitation and detoxification (6.9%) and psychiatric evaluation/therapy (3.9%) were the most evident psychiatric procedures whereas most frequent non-psychiatric procedures were diagnostic coronary arteriography (1%), percutaneous transluminal coronary angioplasty (0.7%), and echocardiogram (0.7%). Top independent predictors of in-hospital mortality were coagulopathy (OR 5.94), AMI (OR 4.59), pulmonary circulation disorder (OR 2.95), CHF (OR2.02), renal failure (OR 1.91), coronary atherosclerosis (OR 1.34) and peripheral vascular disorder (OR 1.31). Major cardiovascular and cerebrovascular events also showed increasing trends among users.
Conclusions: We established the most frequent psychiatric and non-psychiatric causes of admissions and procedures in recreational marijuana users, which may pose a significant healthcare burden and increase the odds of in-hospital mortality

13. Thirty-day Readmissions in Multiple Sclerosis: an Age and Gender-Based US National Retrospective Analysis

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Background: Hospital readmission rate is an important indicator of the quality of care, healthcare economic burden, and post-discharge care. Multiple sclerosis (MS) is a potentially progressive neurological disease predominantly affecting young women. The natural history of the disease involves intermittent relapses and/or accrued baseline disability overtime especially in older patients contributing to frequent hospitalizations. The readmission metrics for patients with MS have not been studied.
Objectives: To estimate nationwide 30-day readmission (30-DR) rate among patients hospitalized with MS and to study the predictors of readmission based on age and gender.
Material and Methods: This was a retrospective observational cohort study of patients hospitalized with primary discharge diagnosis of MS using 2013 Nationwide Readmission Database (NRD). The cases were identified by ICD 9-CM code (340) linked to MS diagnosis. We used patient unique identifiers 'NRD visit link' to identify MS index hospitalizations and readmissions. Age (<40vs. >40 years) and gender-based analyses were performed using multivariable logistic regression adjusting co-variables to identify the patient/system-specific factors associated with 30-DR.
Results: The overall 30-day readmission rate (30-DRR) was 10.2%. No gender difference was seen in the readmission rates (men 10.7% vs. women 10.1%, p = 0.56); higher readmission rates were observed in older patients (11.2% vs. 8.8%; p = 0.0055). However, readmission cost was higher in younger age group ($ 12,586 vs.~$ 11,827; p = 0.62) and among women ($12,217 vs.~$ 11,746; p = 0.75). The common causes of 30-DR were MS exacerbation (42.5%), sepsis (13.7%) and respiratory complications (7.3%). The predictors of higher 30-DRR in younger patients were diabetes (OR 1.87, p = 0.02), intravenous immunoglobulin(IVIG) use (OR 3.64, p = 0.016), and discharge to a nursing facility (OR 1.66, p = 0.03),whereas in older age group, higher Charlson-Deyo Comorbidity Index (CCI) (OR 1.15, p =0.0057), and plasma exchange (PLEX) (OR 2.38, p = 0.03) were predictive of higher readmission rate. The longer length of stay (LOS) during index admission (OR 1.81, p =0.03) in men and higher CCI (OR 1.15, p = 0.007) and intravenous immunoglobulin (IVIG) use (OR 2.27, p = 0.04) in women increased the odds of readmission.
Conclusions: The overall 30-day readmission rate among patients following hospitalization for MS was10.2%. The readmission rate was higher in older (>40 years) patients. The common causes of readmission were MS exacerbation, respiratory complications, and sepsis. A higher systemic disease burden, longer length of stay, and treatment with IVIG and PLEX were associated with higher risk of readmission. The readmissions were associated with higher cost of care and longer LOS compared to index admissions highlighting the economic impact of readmissions. Future strategies to lower the risk of readmissions in patients with MS should focus on optimal management of medical co-morbidities and infections.

14. Alarming Trends of Cardiovascular and Cerebrovascular Diseases and Outcomes Among Young Adults (18-39 years) Hospitalized with Depression: a Nationwide Observational Analysis

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Background: Modern-day studies that assessed temporal trends in cardiovascular and cerebrovascular events (CCE) and outcomes among the young population of the United States with depression remain limited.

Material and Methods: We assessed and compared the frequency of all-cause mortality, acute myocardial infarction (AMI), percutaneous coronary interventions (PCI), arrhythmia, stroke, and venous thromboembolism (VTE) in addition to demographics and comorbidities among hospitalized young adults (18-39 years) with vs. without depression from 2007-2014.
Results: A total of 3,575,275 (5.7%; median 31yrs, 71.3% females) patients out of 63,020,008 hospitalized young adults had comorbid depression. The cohort with depression more often comprised of relatively older (31 vs. 29 yrs.), White (71.5% vs. 54.1%), male (28.7% vs.22.4%), and had non-elective admissions (75.2% vs. 65.4%) ($p<0.001$). We observed higher rates of cardiac/non-cardiac comorbidities, all-cause mortality (0.4% vs. 0.3%), PCI (0.2% vs.0.1%), arrhythmia (6.6% vs. 3.2%), VTE (1.9% vs. 0.9%) and stroke (0.5% vs. 0.3%) amongst depressed youth as compared to non-depressed ($p<0.001$). The rising trend in all-cause mortality was observed among depressed from 2007-2014 against a stable trend in non-depressed ($p_{trend}<0.001$). Trends in the prevalence of AMI remained stable among depressed with consistent upsurges in arrhythmia and stroke ($p_{trend}<0.001$). Depressed youth had extended hospital stay (3 vs. 2 days), higher hospitalization charges ($15,600 vs. $12,920) and were more often transferred to other facilities or discharged against advice ($p<0.001$).
Conclusions: The rising in-hospital mortality and CCE, and higher resource utilization among young adults with depression are concerning and warrants a multidisciplinary preventive approach to improve long-term outcomes.

15. Effects of Prazosin in Nightmares in Children and Adolescents

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Background: Posttraumatic stress disorder in children and adolescents can lead to depression, anxiety, and other psychiatric issues later in life. Nightmares especially when they interfere with sleep on a daily basis related to PTSD can impair daily life functioning. It is imperative to treat symptoms of PTSD especially nightmares at an early age. However, the pharmacological treatment of PTSD is based highly on the literature and evidence of medications used for the management of adult PTSD.
Objectives: To determine the tolerability of Prazosin for nightmares in children and adolescents.
Material and Methods: Using search times, ("Nightmares" OR "Night terrors" OR "vivid dreams") AND (("prazosin" OR "alpha-adrenergic antagonist") AND ("Children" OR "Adolescent" OR "pediatric" OR "pediatric population")) improvement, we concluded about 11 articles.
Results: After the full-text review, 8 articles met her our inclusion criteria. There were 6 case reports, and one retrospective chart review. Retrospective chart review included 40 children and adolescents with a mean age of 13.4 at ±2.9 years with the diagnosis of PTSD. 82% were females and a history of sexual abuse was found in 76% of the cohort. The use of prazosin for 10.2 ±8.1 weeks improved nightmares and sleep to a significant level. Only 8 patients showed side effects which included anxiety and dizziness etc. 1 case report of a 15-year-old female with PTSD had complete resolution of nightmares with prazosin with the dose range of 1 to 4 mg. Another 16-year-old girl with PTSD showed improvement in her nightmares at 1 to 2 mg of prazosin. As low as 1 and 1 to 1.5 mg of prazosin improved nightmares and a 7-year-old and 16-year-old boy. 2 females with ages 16 and 15 years showed improvement of nightmares after 2 weeks of use of 1 to 3 mg of prazosin. 1 to 3 mg prazosin also helped with nightmares in a 10-year-old boy.
Conclusions: Although a review shows the beneficial effects of prazosin on nightmares and PTSD, there remains a need for of more trials of prazosin use.

Discussion: There are no approved medications for nightmares in PTSD. Above reported case report and chart review showed the promising effects of prazosin with minimal side effects which can be prevented with close dose and side effect monitoring.

16. Higher Odds and Rising Trends in Arrhythmia among Young Cannabis Users with Comorbid Depression

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Background: Cannabis (marijuana) use and depression are known to be strongly interconnected. However, amid alarming rates of mental health problems in the United States young population, the risk of arrhythmia among young cannabis users with comorbid depression has never been studied.
Material and Methods: In-hospital encounters of arrhythmia were identified among young cannabis users (18- 39 years) with or without depression using the National Inpatient Sample (2007-2014) databases and apposite ICD-9 codes. Baseline characteristics and trends in prevalence of arrhythmia were evaluated among inpatient young cannabis users with or without depression. A multivariate regression was performed after adjusting for baseline demographics, comorbidities and parallel history of substance abuse.
Results: Of 2,011,598 young cannabis users (59.6% male) admitted from 2007-2014, 190,146 (9.5%) of patients had comorbid depression. Cannabis users with depression were more likely older, white, females and frequently hospitalized in Midwest and rural hospitals. We observed a steadily rising trend in prevalence of arrhythmia in both groups, but a more rapid in cannabis users with depression (4.9% in 2007 to 8.5% in 2014 vs. 3.7% in 2007 to 5.7% in 2014). Correspondingly, young depressed cannabis users had higher odds of arrhythmia compared to non-depressed even after controlling for demographics and comorbidities (OR: 1.41, 95% CI:1.38-1.44, p<0.001).
Conclusions: Rampant recreational use of marijuana with depression may increase the risk of arrhythmia by 40% in young cannabis users as compared to non-users.

17. Micro-RNA Clusters in Maternal Obesity and Cardiovascular Remodeling in First and Second Trimesters

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Background: Maternal obesity (MO) is the global health problem, associated with high fetal and maternal mortality. Cardiovascular remodeling in obese pregnant patients has been linked to development of preeclampsia. Micro-RNAs are playing a critical role in pregnancy development and in the cardiovascular

remodeling. MicroRNAs are non-coding RNAs that regulate gene expression by blocking transcription or by expressing translation of their target genes. In the context of cardiac remodeling and hypertrophy, a number of studies have shown the importance of microRNAs in the regulation of gene expression. In mice with left ventricular pressure overload, 11
miRNAs showed upregulation, and five of them were also increased in the failing human heart. However, the majority of these microRNAs are involved in pathological cardiac hypertrophy and very few studies have tried to identify signature microRNAs that are differentially regulated in physiological versus pathological hypertrophy.

Objectives: The goal of this study was to evaluate pregnancy and cardiovascular remodeling specific RNA clusters in MO and non-obese (nOB) pregnant patients in the first and second trimesters.

Material and Methods: This was a prospective observational study, patients were enrolled during first trimester of pregnancy according to the IRB-approved protocol (L#17-136): obese(MO, BMI = 30 kg/m², n=13) and non-obese (nOB, BMI<30 kg/m² , n=14). Patients with pre-pregnancy cardiovascular pathology were excluded. Cardiovascular indices (2D ultrasound evaluation) and blood samples were collected in first and second trimesters of pregnancy.

Results: We identified MicroRNA clusters associated with obesity and pregnancy progression. In the first trimester 25 microRNA were different between obese and non-obese groups.

Name	Fold change	#REF!	Pvalue	Tvalue
TRNAD18	16.1128	4.010134949	0.0996	-1.758
TRNAD11	16.1128	4.010134949	0.0996	-1.758
TRNAD13	16.1128	4.010134949	0.0996	-1.758
TRNAD6	16.1128	4.010134949	0.0996	-1.758
TRNAD5	16.1128	4.010134949	0.0996	-1.758
SNORD20	45.97379	5.522739686	0.0894	-1.819
SNORD82	0.058548	-4.09423585	0.0686	1.963
TRNAD8	16.1128	4.010134949	0.0996	-1.758
TRNAD14	16.1128	4.010134949	0.0996	-1.758
TRNAD9	27.82078	4.798091147	0.0322	-2.355
RN7SK	43.54921	5.444574735	0.0798	-1.881
RNY5	40.55862	5.341936818	0.0775	-1.897
TRNAV11	25.04464	4.646429997	0.0902	-1.814
SNORD14D	39.46968	5.302672886	0.0787	-1.888
TRNAD12	16.1128	4.010134949	0.0996	-1.758
TRNAD15	16.1128	4.010134949	0.0996	-1.758
TRNAD16	16.1128	4.010134949	0.0996	-1.758
TRNAP17	12.83378	3.681874349	0.0737	-1.924
SNORD116-14	16.9517	4.083357949	0.0621	-2.017
TRNAK9	1.750073	0.807415454	0.0187	-2.626
TRNAD17	16.1128	4.010134949	0.0996	-1.758
SNORD1C	0.058548	-4.09423585	0.0686	1.963
TRNAV32	29.85262	4.899785537	0.059	-2.043
SNORD57	0.063859	-3.968959241	0.0685	1.963
TRNAV19	25.04464	4.646429997	0.0902	-1.814

Conclusions: Limitations of this study are small sample size, non-inclusion of other predisposed populations (PCOS, GDM, autoimmune disorders) and loss to follow-up. MicroRNA could be targeted by miR specific pharmacological agents to improve pregnancy outcomes in MO.

18. The Role of Metformin in Treatment of Weight Gain Associated with Antipsychotic Treatment in Children and Adolescents: A Meta-Analysis of Randomized Controlled Trials

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Background: Second generation antipsychotics are frequently used for the treatment of psychotic disorder in children and young adults. However, it is associated with significant weight gain. Metformin, which is very effectively used in adults can potentially be used in children and adolescents.
Objectives: We performed a meta-analysis of published randomized studies comparing metformin to placebo for the treatment of weight gain in children and young adults treated with second-generation antipsychotics.
Material and Methods: We performed a comprehensive search of Medline, Google Scholar, PubMed, abstracts from annual scientific sessions, and Cochrane library database for randomized studies which assessed the metformin to placebo for the treatment of weight gain in children and young adults treated with second generation antipsychotics. From all the studies, data were collected for change in anthropological-biochemical parameters, drug discontinuation rate, and side effects in each group. The random-effects (DerSimonian and Laird) method was used for meta-analysis.
Results: Four studies with a total of 213 patients were included in the final analysis; 106 patients in Metformin and 107 patients in control group. In majority of the patients, secondary antipsychotic was risperidone and aripiprazole. After pooled analysis, metformin was associated with a significant reduction in weight compared to control (Mean difference (MD): -4.65 lbs., 95% confidence interval (CI) (-5.58, -3.71), and BMI z score [MD, -0.09, 95% CI: (-0.16, -0.03)]. In addition, metformin was associated with reduction in insulin resistance [HOMA-IR MD: -1.38, 95% CI: -2.26 to -0.51, p-value :0.002]. There was no difference in drug discontinuation rate,[Odds ratio : 2.15 (0.78-5.90),p-value : 0.14] however metformin was associated with higher number of nausea-vomiting [OR :4.07 (1.32-12.54), p-value : 0.02] and diarrhea[OR : 2.93 (1.50-5.71), p-value : 0.002].
Conclusions: Metformin is beneficial in the treatment of weight gain in children and young adults treated with second-generation antipsychotics. Although the pooled treatment effect is quite impressive with almost 5lbs difference in just12-16 weeks, small number of studies, more number of GI side effects, variation in metformin dose and duration of treatment in each study make our results preliminary, but worthy of further investigation and robust enough for Metformin to be used regularly.

19. Cardiovascular Remodeling and Nutrient Intake in Pregnancy among Women at the Permian Basin

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Background: Maternal mortality has been increasing in the United States of America at the rate of 6.1% per year. The main factors that, contributing to maternal death, are preeclampsia (PE) and hypertensive disorders in pregnancy. Dietary intake of vegetables, plant foods and vegetable oils were associated with a low risk of PE, while high intake of processed meat, consumption, sugar-sweetened beverages, drinks and snacks increased a risk of PE development. Thus, nutritional interventions during pregnancy would be valuable for the prevention of preeclampsia. There is an urgent need to evaluate dietary patterns in the Permian Basin rural population of pregnant women.
Objectives: To evaluate dietary patterns in the Permian Basin rural population of pregnant women.
Material and Methods: This is the secondary data analyses of provided by our group evaluation of the food intake in the population of pregnant women (Arispe et al, presenting at the PB research Day 2020). Observational prospective cohort study (L20-032). Participants registered food intake, for at least two weeks in the first trimester. The medians (25th; 75th percentile) of important nutrients (Protein (P), Carbohydrates (COH), Fats (F)) and total energy (TE) intake were calculated. Blood pressure (BP) (systolic (S) and diastolic (D)), mean arterial pressure (MAP) were recorded in the first and second trimesters and differenced (d) between trimesters were calculated. Linear correlation coefficients between intake of each nutrient or energy and each BP outcome were computed using R statistical software (version 3.5.2).
Results: Daily P intake correlated negatively with MAP (1) and dSBP (r= -0.82; P=0.01 and r=-0.89; p=0.003). Cholesterol intake correlated positively with dMAP and negatively with dDBP (r=0.79; p=0.02 and r=-0.8; p=0.02 respectively). PUFA intake correlated positively with dDBP (r=0.7, p=0.05). Correlation between PUFA intake and dSBP was close to significance(p=0.073).
Conclusions: Our data is consistent with published associations between cholesterol intake and increased blood pressure. PUFA intake has a beneficial role in cardiovascular health in general and the results in our study show that PUFA may play a beneficial role for the cardiovascular health during critical periods of placental development. According to the literature sodium, iron, iodine and Vitamin D intakes are associated with occurrence of pregnancy hypertension. Despite increased sodium intake in our study, there were no correlations with intake of this micronutrient and blood pressure. In summary, is important to monitor dietary intakes in pregnant women to ensure sufficient intakes of those nutrients that have a protective role, as well as restricting those nutrients that negatively impact cardiovascular health, specifically related to blood pressure.

20. Money Talk: Lessons Learned from Claims data from Medicaid Texas Health Steps at TTUHSC Family Medicine, Odessa

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Background: A large portion of the Family Medicine Clinic pediatric visits are comprised of Medicaid Texas Health Step visits. Medicaid has formulated a Texas Health Steps (THS) visit, a routine well child check that evaluates the child's physical and mental health and general safety. Several components of the visit must be completed in order to obtain reimbursement for the visit. For our clinic, we decided to investigate why many of these visits were not reimbursed.
Objectives: To determine the reasons for non-reimbursement of claims for Texas Health Steps Family Medicine visits. To determine if note deficiency is a significant reason for non-reimbursement. To identify

areas of training improvement for incoming residents. To help in increasing reimbursement income for Texas Health Steps Visits in support of our clinic.
Material and Methods: The billing and coding department provided the THS claims data spanning the period of July2018- June 2019. Patient charts were reviewed for reasons for non-reimbursement by matching the visit date with the notes submitted for billing. Then all correspondence between the billing department and the physician regarding missing elements in note or otherwise were reviewed. The software, SAS 9.4, was used in analyzing data and creating summary statistics.
Results: Ultimately, the most common reason for reimbursement loss was missing notes at time of billing which accounted for 44% of the total loss. The second most common reason for loss was missing the ASQ (Autism Screening Questionnaire) component of the encounter which made up 14% (9 cases). A variety of other reasons accounted for the remaining 42%.
Conclusions: In addressing the issues in totality, we plan to educate our residents on these loopholes regularly. In conjunction with our program director, we shall build THS visit training into the yearly orientation program which is compulsory for all residents. In the coming year, we will do a case-control analysis of our post intervention claims to see if our efforts and interventions have paid off.

21. Increasing the Awareness (via Post Card Reminders) Regarding the Need for Pneumococcal 13 Vaccine and Subsequently Increasing Immunization Rates in Patients 65 Years or Older

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Background: CDC estimates that as many as 400,000 hospitalizations from pneumococcal pneumonia occur annually in the United States. Pneumococci account for up to 30% of adult community-acquired pneumonia. Bacteremia occurs in up to 25–30% of patients with pneumococcal pneumonia. The case-fatality rate is 5–7% and may be much higher among elderly persons. Complications of pneumococcal pneumonia include empyema, pericarditis, and respiratory failure. The rates of Pneumonia immunization for patient population specified have been very low in the recent past with more and more patients presenting with pneumonia and/or related complications during the winter season particularly.
Objectives: The goal of this study is to increase awareness of the selected population regarding the prevention of the highly prevalent Pneumococcal pneumonia through timely vaccination with the goal of decreasing the morbidity/mortality associated with it.
Material and Methods: The IT department at Texas Tech clinic, Odessa was able to identify all eligible participants based on their immunization status, their age and concomitant co-morbid conditions (like diabetes, HIV, patients on Immunosuppressive therapy etc.).Post card reminders were then mailed out to all eligible participants with the aim of a better turn out of patients to receive immunization. Those interested will be given vaccination either at the clinic or an outside facility with proper documentation of immunization received in either scenario. A 6-month follow is proposed to assess how many of the selected patients received immunization and how many did not. Those who did not, efforts be made to increase awareness, address any concerns they may have and, in this way, ensure a higher rate of pneumococcal immunization in the proposed population.
Results: Still following up with patients and final results of successful intervention i.e. awareness regarding need for pneumococcal 13 vaccine will be presented in the poster, upon successful completion of telephonic follow up with all involved subjects.
Conclusions: The success of the proposed intervention will be measured by projected increase in rate of immunizations received in the selected population. The proposed intervention includes the initial mailing

out of post card reminders, proper documentation for pneumococcal vaccine administered and 6 month telephonic follow up regarding vaccination received or not received – addressing concerns for patients who have not received immunization at the end of 6 months.

22. Suvorexant for Insomnia in Older adults: a Perspective Review

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Background: Suvorexant, a dual orexin receptor antagonist (DORA), was approved by the US Food and Drug Administration (FDA) in 2014 for the treatment of insomnia.
Objectives: The aim of this review was to identify published randomized control trials (RCTs) that evaluated the efficacy and tolerability of suvorexant for the treatment of insomnia among older adults (=65 years).Material and Methods: A literature search was conducted of PubMed, MEDLINE, EMBASE, PsycINFO and Cochrane collaboration databases for RCTs in any language evaluating suvorexant for the treatment of insomnia in older adults. Additionally, references of full-text articles that were included in this review were searched for further studies.
Results: Data from three RCTs of suvorexant were included in this review. All the three studies fulfilled the criteria for being of good quality based on the items listed by the Center for Evidence Based Medicine (CEBM) for the assessment of RCTs. None of the three studies were conducted exclusively among older adults. However, they also included older individuals diagnosed with primary insomnia. These studies included a total of 1298 participants aged =65 years in age. Trial durations ranged from 3 months to 1 year. Available data from these studies indicate that suvorexant improves multiple subjective and polysomnographic sleep parameters for sleep onset and maintenance among older individuals with a diagnosis of primary insomnia and is generally well tolerated.
Conclusions: Current evidence, although limited, indicates that suvorexant benefits older adults with primary insomnia and is generally well tolerated.

23. Potential Pitfalls of a Smartphone App-Based Evaluation of Food Intake in Pregnant Women of the Permian Basin

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Background: Maternal mortality has been increasing in the USA at the rate of 6.1% per year.
Objectives: The goal of this study was to evaluate application of a Mobile app (MyFitnessPal, MFPA) in documentation of dietary patterns in the rural population of pregnant women as a basis for a nutritional intervention to improve pregnancy outcomes.

Material and Methods: Observational prospective cohort study (L20-032). Pregnant women were enrolled in the first trimester of pregnancy. Participants were asked to log their food intake, using MFPA, for at least two weeks in the first and the second trimesters respectively. The medians (25th; 75th percentile) of important nutrients (Protein (P), Carbohydrates (COH), Fats (F)) and total energy (TE) intake were calculated and compared to EAR. The measured outcomes were also compared with published reference values [REF] (1,2) in a series of Wilcoxon signed rank tests using R statistical software (version 3.5.2).
Results: Total number of patients enrolled into the study is 27: five patients discontinued; 11 patients had no complete records yet; 11 patients completed first trimester food intake. F, COH and P intakes were similar to a published cohort study (n=30). TE for macronutrients were below values of REF2: TE (87.5% < 9946 kJ REE), Prot (75% < 71 g/day RDA) and COH (12.5%<135 g EAR). High intakes of COH (median intake 159 grams per person per day) and sodium intakes (>2300mg) were observed.
Conclusions: Despite being a rural population, the food intake in general did not differ from the published study (n=30), however, it was different for data published for a Mexican American population (2) and showed poor intakes when compared to EAR. These data point out limitations of self-reported food intake and ways to improve app reporting need to be investigated.

24. Vaginal Lactobacilli and Recurrent Fungal Vaginitis

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Background: Lactobacillus species play a vital role in the vagina, inhibiting the growth of pathogenic bacteria. Very few studies examined the relationship of Lactobacillus spp. with recurrent fungal vaginitis. Some Lactobacillus spp. produce a biofilm that protects against microbe proliferation. A common cause of vaginitis is infection by the fungal species, Candida, resulting in discharge, redness, and pain. For Candida to become pathogenic, the vaginal epithelium, microbiome, or the specific microbes need to be altered.
Objectives: The objectives of this study are to compare the fungal communities identified by clinical findings vs lab culture methods and to examine the relationship of Lactobacillus spp. and patients with recurrent fungal vaginitis.

Material and Methods: Fungal communities from vaginal swabs were classified by lab culture method (Sabouraud dextrose agar and mycobiotic agar). In clinics, diagnosis of fungal infections of vaginal swabs is accomplished using wet mounts/potassium hydroxide preparation in symptomatic patients. A real-time PCR was carried out on vaginal swabs to detect specific Lactobacillus species and culture method was used to confirm specific fungal species.Results:17 swabs confirmed with fungal infections by clinical finding, but out of 17 swabs only 13(approx. 77%) confirmed with specific Candida spp. by lab culture method. There was no significant difference in Lactobacillus spp. between clinical findings and lab culture method.
Conclusions: Some Lactobacillus spp. can survive and protect against harmful pathogens in patients with recurrent fungal vaginitis. Lab culture method and other precise identification methods are required to confirm particular Lactobacillus spp. and fungal species.

25. Vaginal Lactobacilli Spp. and Inflammatory Biomarkers in Pregnancy

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Background: However, there is a lack of data concerning Lactobacillus spp. composition & cytokine expression in vaginal swab samples of different groups of women in the United States, and itis uncertain whether systemic inflammatory markers and lower reproductive tract inflammatory markers during pregnancy reflect similar or divergent pathways. Therefore, this study seeks to identify the specific profile of Lactobacillus species and cytokine expression indifferent groups of women, including primigravida vs multigravida women and pregnant vs non-pregnant women. Better understanding of the vaginal microbiome and its cytokine components in relation to pregnancy may be helpful in predicting or preventing major morbidity.
Objectives: The objective of this study is to identify vaginal Lactobacillus spp. and quantify inflammatory cytokines in primigravida vs multigravida women and pregnant vs non-pregnant women.
Material and Methods: Vaginal swabs were obtained from different groups of patients. A real-time PCR was carried out to recognize the bacterial communities. Multiplex immunoassays were performed to quantify a total of 27 cytokines using the Bio-Plex MAGPIX multiplex reader instrument and MesoQuick Plex SQ 120 instrument. Inferential statistics using hypothesis tests were applied to detect differences in cytokine levels between groups of women.
Results: L. iners was the most abundant species in multigravida, pregnant and non-pregnant women, while L. crispatus was the most abundant species in the primigravida women. The samples provide evidence that levels of anti-inflammatory cytokines (IL-4, IL-10, and IL-13) and chemokines (MIP-1a) are higher in multigravida women as compared to primigravida women, and that non-pregnant women have elevated levels of anti-inflammatory cytokine (IFN-?),chemokines (MCP-1 and MIP-1ß), and an eosinophil activation and recruitment cytokine (IL-2) as compared to non-pregnant women.
Conclusions: Lactobacillus spp., play a vital role in maintaining vaginal health and the complex balance of vaginal cytokines, have potential as useful biomarkers in the study of obstetrical and perinatal medicine. We increase our understanding from our study results, the role of vaginal cytokines, with the goal that this inflammation can be useful in preventing obstetrical conditions.

26. Evaluation of Implementation of Immediate Postpartum Contraception at Medical Center Hospital

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Background: Unintended pregnancy is endemic in the US, disproportionally effecting women of color and low socio-economic status. On January 1, 2016, Texas became the 17th state to allow Medicaid to reimburse for immediate postpartum (IPP) insertion of long active reversible contraception (LARC). Failure to initiate contraception after delivery is one of the primary reasons for short-interval pregnancies at less than 12-18 months. (4) While the benefits of postpartum contraception use are widely recognized and

use of LARC is increasing in the United States, many postpartum women who wish to delay or avoid childbearing entirely are using less effective methods or no method at all.1,2 An earlier study of postpartum access to contraception in two cities in Texas conducted by our research team demonstrated an unmet demand for highly effective methods during the postpartum period, and that if women do not receive their preferred method immediately or by three months postpartum, they are unlikely to receive it at all.

Objectives: We tracked our progress in providing this service over the first 17 months it was offered. We hope to gain more insight into barriers/challenges faced in implementing IPP LARC, as well as successes.

Material and Methods: The protocol was exempt from formal IRB Review, IRB# L20-059. A report was run to identify patients admitted to our service (Texas Tech Physicians) who delivered and those who were billed for an IPP LARC, such as an IUD or Nexplanon, from December 2017 to June2019. Total number of deliveries was identified as were the number of LARCs inserted. Exclusion criteria for insertion data was any insertion not completed within the timeframe or as part of the immediate postpartum period. For delivery data, any delivery completed outside the timeframe mentioned was excluded. There was no compensation given to patients or the hospital to participate in this study.

Results:176 Nexplanon insertions were billed for as well as 4 intrauterine devices. Texas Tech Physicians delivered 1,408 patients between December 2017 & June 2019. 12.8% of our patients received immediate postpartum, long acting reversible contraception in this timeframe.

Conclusions: Finding both the victories and barriers/challenges to improving placement rates in hospitals is paramount. Texas Tech University Health Sciences Center at the Permian Basin and Medical Center Hospital (MCH) began placement of IPP LARC's in February 2017, and retrospective data was obtained on funding status of deliveries with IPP LARC placement through June2019 via electronic medical record (EMR) review.

27. Reducing Inpatient Laboratory Tests Ordered by Internal Medicine Residents

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Background: Daily morning laboratory tests are frequently ordered by residents on hospitalized patients and sometimes without any particular indication. Although laboratory expenditure often represents less than 5% of most hospital budgets, the impact is far-reaching given that laboratory tests influence nearly 60% to 70% of all medical decisions. Excessive phlebotomy can lead to hospital-acquired anemia, increased costs, and unnecessary downstream testing and procedures. Efforts to reduce the frequency of laboratory orders can improve patient satisfaction and reduce cost without negatively affecting patient outcomes. We present a Quality Improvement project undertaken at Medical Center Hospital to reduce laboratory tests.

Material and Methods: A survey undertaken by residents before intervention revealed that 46% of residents were unaware of the costs of common laboratory tests, 81% residents had received complaints from patients regarding frequent needle sticks and 16% were ordering morning laboratory tests every day on every patient. We used a multifaceted approach to educate residents that included daily reminders on interdisciplinary rounds by attending physicians to order only relevant laboratory tests and biweekly reminders with emails. Residents were also instructed to order Basic metabolic profile (BMP) instead of Comprehensive metabolic profile (CMP) and Complete blood count without differential whenever deemed appropriate to reduce cost. We collected data on residents ordering CBC with differential, CBC

without differential, BMP, CMP, Magnesium level and Phosphorous Level for 5 months before any intervention and then for 6 months after education and intervention were introduced.
Results: The average number of laboratory tests before the intervention period per patient was7.05 and after the intervention period it came down to 6.22. CMP ordered per patient came down from 1.6 to 1.1 and CBC with differential from 2.0 to 1.6 but at the cost of BMP going up from 0.8 to 1.1 per patient and CBC without differential from 0.28 to 0.38. The total adjusted cost reduction was $ 218706 for 6 months intervention period.
Conclusions: Interventions focusing on educating residents to the appropriate indications and costs of laboratory testing helps decrease the number of laboratory tests ordered. Another important aspect of EMR enabled restricted laboratory orders was beyond the realm of our quality improvement. Although reducing daily laboratory testing addresses only one aspect of hospitalized care, a change can have a profound effect on institutional culture leading to improved safety, satisfaction, and cost-effectiveness for all stakeholders.

28. Safety and Efficacy of Daptomycin Dosing in Obese Population: Using Adjusted Body Weight versus Actual Body Weight

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Background: Daptomycin is a lipopeptide, bactericidal antibiotic dosed using actual body weight (ABW). In obese patients, using ABW can cause adverse drug effects like Creatine phosphokinase (CPK) elevation causing myopathy/rhabdomyolysis and unnecessary expenses. Using the Adjusted body weight (AdjBW) dosing in obese patients may be an alternative strategy.
Objectives: Evaluate the safety and efficacy of using adjusted body weight versus actual body weight for dosing of Daptomycin in patients withBMI³30.Efficacy defined as improvement (resolution of signs &symptoms) or failure (30-day readmission or mortality).
Material and Methods: Single-centered, non-interventional, retrospective cohort study that compares the clinical outcome of daptomycin dosed using AdjBW versus ABW in patients at Medical Center Hospital in Odessa, TX from 2016-2018. IRB approval (IRB #L19-036). Inclusion Criteria: Any sex, age: 18-89 and BMI ³ 30, received daptomycin. Exclusion Criteria: daptomycin for <72hrs, endocarditis, ³ 20% change in weight, Pregnant. Microsoft Excel® used for descriptive statistics and Chi-square analysis to assess the difference in cost, safety and equivalence of clinical outcome between ABW and AdjBW dosing.
Results: Daptomycin was used in 166 patients; 42 patients met the inclusion criteria. The two dosing methods were statistically equivalent for clinical improvement (p-value 0.013). ADW had higher statistically significant CPK elevation, 60% versus 40% (p-value 0.009). Amongst the AdjBW, 14% had CPK elevation with concurrent statin use and 9% patients' not taking statins. The clinical outcome in AdjBW was equivalent for obesity class I, II, III (p -value 0.04). The cost of treatment was 1.8x higher for ABW than AdjBW dosing. Total cost saved by using AdjBW: $58,755.
Conclusions: Using AdjBW is an efficacious, safer and a less expensive alternative of daptomycin dosing in obese patients.

29. Did I order DEXA? Osteoporosis screening at TTUHSC Odessa

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Background: Number of adults with osteoporosis is expected to be 12.3 million in 2020. Direct costs of osteoporotic fractures may exceed $25 billion by 2025.USPSTF recommends screening in women 65 years and older or younger post-menopausal women with increased risk for osteoporosis.
Objectives: Retrospective chart analysis to analyze osteoporosis screening for women 65 years and older at TTUHSC Odessa primary care clinics.
Methods: Data was collected for patients who visited the clinics from October 2016 to October 2019. A sample of 345 out of 3255 patient charts was randomly selected and analyzed.
Results:16% patients (95% CI 12-20%) got DEXA referral. 6% patients (95% CI 3-6%) had prior DEXA by outside physician. 6% patients (95% CI 3-6%) had a past or ongoing osteoporosis medication but no documentation of DEXA. Excluding patients seen for specialty services or having outside PCP, 51% patients (95% CI 46-56%) did not have any documentation of osteoporosis screening. Approximately half of patients receiving DEXA referral scheduled it and 71% of these were diagnosed with osteoporosis or osteopenia. DEXA referral percentage in ages 85 years and older was less than younger age groups. No difference in referral was seen based on insurance type or race/ethnicity.
Conclusion: There is room for improvement of DEXA screening. We propose sending email to all staff, resident, and nurses to consider ordering DEXA scan for eligible patients, and a reminder email be sent every few weeks over a period of 6 months to see if there is an improvement in screening.

30. The Prognostic Impact of Mental Illness among Hospitalized Patients with Takotsubo Cardiomyopathy in Texas, 2007-2014

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Background: Pre-existing mental illness is strongly associated with Takotsubo cardiomyopathy (TC). However, although mental illness has been associated with reduced life expectancy, in part due to cardiovascular disease, and with increased mortality among hospitalized patients, its prognostic impact among patients with TC is unknown.
Objectives: We examined the population-level association of mental illness with short-term mortality among hospitalizations with TC.
Material and Methods: We used the Texas Inpatient Public Use Data File to identify hospitalizations aged =18 years with a principal diagnosis of TC during 2007-2014. Mental illness was defined by the ICD-9 code-based taxonomy of the Healthcare Cost and Utilization Project's Clinical Classification Software Category 5. Socio demographics, clinical characteristics, and hospital outcomes were collected. Multivariate logistic regression modeling was used to examine the association of mental illness with short-term mortality (defined as in-hospital death or discharge to hospice).
Results: There were 1,808 hospitalizations with TC (53.2% aged =65 years; 92.1% female; 29.1% non-white minority). Mental illness was reported in 781 (43.2%) hospitalizations. Crude short-term mortality among hospitalizations with and without mental illness was 3.1% vs. 1.6%, respectively (p=0.0301). On adjusted analyses, mental illness was associated with increased odds of short-term mortality (adjusted odds ratio 2.80 [95% CI 1.24-6.30]; p=0.0129).
Conclusions: Mental illness was prevalent among hospitalized patients with TC. Despite overall low short-term mortality, the presence of mental illness nearly tripled the odds of death among affected patients.

Further studies are needed to elucidate the mechanisms underlying the adverse prognostic impact of mental illness in TC.

31. A systematic Review on Treatment of Tardive Dyskinesia with Valbenazine and Deutetrabenazine

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Background: Recent reports state that the prevalence of tardive dyskinesia (TD) is 32% with typical antipsychotics, and 13% with atypical antipsychotics. Current evidence-based recommendations determine an unmet need for efficacious treatment of TD. This systematic review was planned to update the evidence for TD treatment, comparing two vesicular monoamine transporter 2 (VMAT2) inhibitors, deutetrabenazine (DBZ), and valbenazine (VBZ). Of 75 PubMed search results, 11 studies met the review criteria. Efficacy and tolerability were demonstrated in a series of randomized, placebo-controlled clinical trials in our review study, and the Abnormal Involuntary Movement Scale response of 50% reduction in score was robust for VBZ 80 mg/day in short-term and long-term studies. On the contrary, DBZ was equally efficacious at 12 mg twice daily, but additional information about long-term efficacy and persistence of effect is needed.
Objectives: This systematic review was planned to update the evidence for TD treatment, comparing two vesicular monoamine transporter 2 (VMAT2) inhibitors, deutetrabenazine (DBZ), and valbenazine (VBZ).
Material and Methods: The MEDLINE database was used to identify papers published in English from 1 January 1980 to 31 March 2018. The search strings were 'valbenazine OR deutetrabenazine AND tardive dyskinesia'. Results appearing in more than one search were removed (Figure 1). Tetrabenazine was excluded from systematic review, as studies comparing the efficacy and safety of tetrabenazine and VBZ has been done previously.
Results: Eleven studies emerged from the in-depth screening process and eligibility assessment and were reviewed. A descriptive summary of all studies that met our inclusion criteria is presented in Table 1. The majority of the VBZ9–15 and DBZ18,19 studies were randomized, double-blind, placebo-controlled (DBPC) trials, except two studies, as Thai-Cuarto and colleagues18 conducted a pooled study of three DBPC trials to assess safety of VBZ, and Grigoriadis and colleagues19 conducted the KINECT 3 extension study to evaluate the pharmacology of VBZ. Efficacy of VBZ and DBZ were assessed by the Abnormal Involuntary Movement Scale (AIMS) and Clinical Global Impression of Change (CGIC)–Tardive Dyskinesia (CGI-TD) score.
Conclusions: Studies on the use of DBZ and VBZ for treatment of TD specify that each of these VMAT2 inhibitors led to improvement in patients suffering from TD. Extended VBZ trials (up to 52 weeks) yielded persistently improved results on the AIMS total score for the duration of the study. Nevertheless, the overarching evidence for long-term success of DBZ is limited, as there were only two available controlled studies of 12 weeks' duration. The clinical trials showing the ability to treat TD included both short-term and long-term studies and they were better designed and controlled than the studies with DBZ. Efficacy and tolerability were demonstrated in a series of randomized, placebo-controlled clinical trials in this review study and the AIMS response of 50% reduction in score was strong for VBZ 80 mg/day. On the contrary, DBZ was equally efficacious at the 12 mg b.i.d., but further assessment of longitudinal efficacy and continued symptom reduction is necessary. The recent approval of VBZ and DBZ as the first and second US-Food-and-Drug-Administration-approved psychopharmacologic medications to manage TD is likely to transform current psychiatric practice. Future research is needed to study the impact of VMAT2 inhibitors like VBZ and DBZ on TD and related movement disorders.

32. Evaluation of Term Neonates Born to Mothers without or with Limited Prenatal Care

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Background: Infant mortality rate has declined in the U.S for the past several years. Many factors have a role in that improvement, factors including better prenatal care. Prenatal care helps guide women to have a healthy pregnancy and subsequently healthy babies, as much as possible. However, there are still many women who have limited or no prenatal care at all, for reasons such as financial hardships, cultural or ethnic backgrounds. Inadequate prenatal care has a higher risk for infants for sepsis, admission to NICU and prolonged hospital stay for the neonate. In our particular institution, infants who are born to mothers with no prenatal care are screened with complete cell counts and C-reactive protein, to help determine if they are at increased risk for sepsis that would require more evaluation that is intensive. This retrospective case control study over term (gestation age > 37 weeks) infants will select at least 15 infants with no prenatal care and at least 45 control infants with prenatal care. We hope to help identify term neonates at risk for infection and, perhaps, provide improved prenatal care counseling and interventions.
Objectives: To determine if current protocol of obtaining baseline CBC and CRP for neonates with no or limited prenatal care will help decrease risk of neonatal sepsis.
Material and Methods:
Type of study: retrospective case control
Included in the study:
Neonates > 37 weeks of gestation born to mothers with no prenatal care between 2010-2014
Controls (neonates born to mothers with regular prenatal care)
Next three term (> 37 weeks of gestation) neonates admitted to the nursery after the case selected Same gender
Same delivery mode
We anticipate enrolling at least 50 (max 100) neonates born to mothers with no prenatal care and at least 150 neonates born to mothers with prenatal care
Characteristics we are looking at:
Birth weight of neonate
Presence of small for gestation age or intrauterine growth restriction in neonate
Gestational age of neonate
Maternal age
Hours since rupture of membranes
Presence of dysmorphic features in neonates
Percentage of mothers that received intra-partum prophylaxis
Percentage of mothers positive for Hepatitis B, HIV, VDRL
Peak bilirubin level and need for phototherapy in neonate (if applicable)
Drug screen of neonate and mother (if applicable)
Group B Strep status of mother (if known)
Complete blood count and C-reactive protein of neonates (in cases)
Number of babies in each group that a blood culture was obtained
Results: undergoing statistical analysis.
Conclusions: project currently underway.

33. Resident QI Project to Improve Diabetic Care in the Outpatient Setting at the TTIM Odessa Clinic

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Background: On average, 162,000 Texans are diagnosed with Diabetes annually. With advanced treatment options currently available, the patient population in West Texas still has barriers to access healthcare, varied awareness and misconceptions about their condition.

Objectives: We designed an initiative to improve the quality of care for the diabetic patients attending the TTIM Odessa Resident Clinic.

Materials and Methods: We reviewed EMRs of diabetic patients attending the clinic one month before initiating the quality intervention and collected and documented the following six variables: HbA1c every 3 months, Urine Albumin Creatinine Ratio with necessary initiation of therapy with ACEI, Monofilament test, Annual podiatry and ophthalmology referrals, appropriate initiation of statin therapy based on ASCVD (Atherosclerotic Cardiovascular Disease) 10-year Risk Score. We conducted monthly PDSA cycles to plan appropriate interventions, which included provider and patient education.

Results: From the gathered observations, we noted that most of our patients were at goal for HbA1c. The proportion of patients who had a monofilament test increased from 19% to 83%, patient proportion receiving annual referrals for ophthalmology and podiatry increased from 31% to 55% and 6% to 14%, respectively. The proportion of patients receiving Urine ACR increased from 19% to 24%. We noted a decline in initiation of statin therapy.

Conclusions: Incorporating a practice-based learning environment into the resident training curriculum is an efficient way to bring about quick and steady change to achieve goals in care. We conclude that the clinic requires improvement in documentation and clinical practice, reduction in no-show rate, patient education, resident involvement and continuity of care.

Basic Science Research

34. X-Ray Micro computed Tomography-Virtual Reality Tool - Novel Collaborative Platform to Accelerate Placental Research

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Introduction: Applications of novel technologies for evaluation and understanding complex structure of a biological system has been a rapidly developing field in the traditionally conservative area of placental histology and pathology. New machine learning approaches have been applied to whole slide scanning and pattern recognition and quantification. Novel techniques for evaluation and understanding of 3D

placental images obtained from MRI and CT scans are under rapid development as well. Finally, citizen-scientists proved to be a great resource for large-scale NIH projects. Here, we leverage a new visualization software package, syGlass, which is capable of volumetric rendering of 3D image sets, for the tracing of placenta villi in Virtual Reality (VR) mode.

Material and Methods: Placentas were obtained from a planned cesarean section at 165 dGA (full term 163-186 dGA) from pregnant baboons (*Papio spp*), micro CT scan was performed, using methodology for visualizing the fetal vascular network by applying a long-acting aqueous colloidal polydisperse iodinated blood-pool contrast agent, eXIA 160XL, with optimized image acquisition parameters and volume-rendering techniques. Images were visualized, using micro-photonic platform (Micro-photonic Inc, Allentown, PA). Micro-CT images were loaded into the syGlass (Morgantown, WV) software and the villi were traced in stereoscopic VR with 3D controllers. Three longest traceable villi were traced, and their length and radius were measured.

Results: syGlass platform allowed dissection of main channels of intervillous space and villi quickly and easily (Figure 1). The average radius of longest traceable villous outgrow was variable and depended on individual villous selection (Table 1). The platform is able support multiple investigators dissecting placental structure simultaneously in VR space independent on investigators' location.

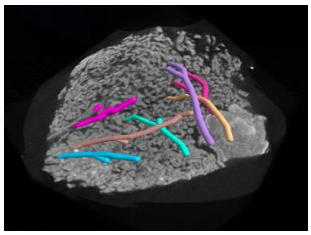

Figure 1: Resulting tracings inside of VR application syGlass.

Conclusion: The novel tool, which combines micro-CT scans with VR visualization is well suited as an effective and unique collaborative platform for modeling, evaluating, and analyzing placental structure. In addition, there is an opportunity to implement a citizen science model with high school students to maximize data annotation and expose students to potential career pathways and advanced scientific method in the evaluation of placental structure and function.

Placenta Data	Time (for all structures)	Largest 3	Avg Radius 1	Avg Radius 2	Avg Radius 3
29275	9:43	1:31	37.60	26.05	23.39
29285	6:04	1:40	35.62	19.81	20.45
29302	7:38	1:06	56.79	23.66	17.70
29310	-	1:13	72.52	33.42	35.09
29311	-	2:02	33.46	27.94	27.55
29330	-	2:31	30.33	25.07	24.80

Table 1: Tracing annotations performed in syGlass. For some datasets, most structures could be traced. For others, only the largest could be traced. To illustrate tracing times, the three largest structures were traced and tracing times and average radii (in relative voxels) are reported.

35. Clostridium Sporogenes on International Space Station (ISS, Mission 13): Collaborative Teaching and Research Effort

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Background: Space exploration has become a reality that will lead to the transition of a new era of human space travel. Space travel imposes a unique environment whereby gravitational parameters alter the natural developmental course of living organisms and their structural characteristics. One of the main concerns associated with long-term space flight experimentation is exposure to space-specific hazards, such as high doses of radiation, which result in the increased lifetime risk of cancer or other radiation-associated diseases. Very few models are viable under low oxygen, high radiation, and microgravity. As such, our objective is to define one such model for researching the effects of microgravity on living organisms. In particular, C. sporogenes (C.s) was chosen as a model organism due to its robustness, anaerobic spore-forming capabilities, and manageability. Additionally, the highly collaborative nature of space-related experimental work requires innovative multi-disciplinary and multi-generational team efforts. In this abstract, we are describing the effects of space on C.s. morphology using morphometric measurements, collected by groups of medical (MedS) and middle school (MS)students. The early educational effort was described previously (https://www.oaoa.com/news/education/ecisd/article_845a3ece-e139-11e8-8ecc-dfa9e300db37.html, Abstract #20, PB research Day 28).
Objectives: In this abstract, we are describing the effects of space on C.s. morphology using morphometric measurements, collected by groups of medical (MedS) and middle school (MS) students.
Material and Methods: In a random double-blind study, a control group (G1, ground truth) and the test group (G 2, space experiment) were assessed for differences due to microgravity exposure on board of ISS. Micro-gravity-exposed and control bacteria were fixed and evaluated, using electron microscopy (EM). The process of EM was explained to the students in a detailed video: https://youtu.be/6aHD-jzg7KA. Evaluation of 104 EM images was performed after training in morphology, the number of spores and bacteria were counted for each life cycle stage. Finally, the largest diameters of each spore were measured.
Results: The average diameter of spores, measured by two investigators in the teaching group, was830. 39 ± 297 nm and 636.2 ± 63 nm for G1 and 1151.48 ± 564 nm/ 617.77± 60.8 nm for G2. The largest diameter was bigger in G2, compared to G1 ($p<0.05$) independent of the individual researcher. Percentage of empty exosporium, count by MS was 8.03% vs 4.3% count by investigators for G1 and 44.36% vs 25.9% for G2 ($p< 0.05$ for differences between G1 and G2for MS and investigators).
Conclusions: The calculations, performed by MS, were in line with those performed by investigators and MedS, while MS tended to overestimate numbers in general. The conditions on ISS changed C.s morphology and potentially decreased the rate of germination of C.s. Similarly, the general conditions of space travel have also shown to slow the progression of human cancer cells. Additionally, outside of the scientific value of this project, the effectiveness of intergenerational teams in problem-solving has been demonstrated. Multi-disciplinary and multi-generational experimental work is a foundation for the future of human space travel.

Case Reports

36. Seizures in a Lupus patient: a 'PRESsing' Issue

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Background: We report a case of SLE with status epilepticus.
Discussion: Patients with SLE in the background of acute nephritis and high-dose steroid therapy can develop PRES. These cases were reported in the past. Careful fluid balance, optimizing steroid therapy, and better control of hypertension will help to prevent this condition. We report this case to generate awareness to consider PRES as a differential in diagnosing acute SLE flares.
Case description: A 40-year-old Hispanic female presented with photosensitive malar rash, fatigue, diffuse joint pains due to bilateral hand and foot synovitis and diffuse edema. Labs revealed positive ANA 1: 2560 speckled pattern, double-stranded DNA (1:10), SSB antibody (170), SSA antibody (193), and anti-Smith antibody. There was also low C3 and C4 and RNP and rheumatoid factor were negative. Significant proteinuria, hematuria, leukopenia, and thrombocytopenia were also found. Renal biopsy was deferred due to congenital single kidney status and thrombocytopenia. A diagnosis of systemic lupus erythematosus (SLE) with lupus nephritis was made.

She was admitted to the hospital and received pulse dose intravenous methylprednisolone, followed by prednisone 60 mg and mycophenolate 3 g daily. Her condition improved and she was discharged home. She came back to the hospital after one week with status epilepticus. CSF analysis and CT scan of the head were normal. A diagnosis of lupus cerebritis was considered and intravenous cyclophosphamide was given. MRI scan suggested posterior reversible encephalopathy syndrome (PRES). Even though lupus cerebritis was suspected initially, she improved with supportive care and levetiracetam therapy. We continued lupus nephritis therapy and gradually tapered prednisone. She recovered without any neurological sequelae.

37. Acute Lung Toxicity due to Nitrofurantoin

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Background: Nitrofurantoin is an antimicrobial drug recommended as the first-line treatment for uncomplicated urinary tract infections (UTIs), as well as prophylaxis for recurrent UTIs. The most common side effects include nausea, vomiting, and diarrhea, among others, very rarely, like pulmonary toxicity. Pulmonary toxicity may range from acute, subacute, or chronic. Both acute and subacute reactions are thought to be secondary to a hypersensitivity reaction and are dose independent. In contrast, chronic pulmonary reactions, which include diffuse interstitial pneumonitis and pulmonary fibrosis, are related to the total lifetime dosage. Nitrofurantoin-associated pulmonary injuries are reported in less than 1% of patients who took nitrofurantoin,85% in women, most likely related to the fact that women are more susceptible to recurrent UTIs.
Case Description: 81-year-old female with a past medical history of hypertension, hyperlipidemia, hypothyroidism, former smoker, with no known drug allergies or occupational exposure. Recently diagnosed with right-side pyelonephritis by Computed Tomography (CT), with urine culture positive for

Escherichia coli, treated with nitrofurantoin. After 3 days of treatment, despite significant improvement of right flank pain and urinary symptoms, she developed shortness of breath associated with cough and malaise. She denied fever, chills, wheezing, or chest pain. On physical exam, she was afebrile, tachypneic, hypoxic, decreased breath sounds, and crackles on both lung bases, no wheezing, JVD, or peripheral edema noted. Laboratory results showed mild eosinophilia 5.2% and normal electrolyte panel, renal and liver function test, brain natriuretic peptide, HIV test, rheumatoid factor, TSH, myeloperoxidase IgG, and serine protease 3 IgG. Electrocardiogram with normal sinus rhythm. CT thorax with contrast on admission revealed moderate bilateral pleural effusion and extensive bilateral pulmonary interstitial prominence, mostly with peripheral distribution suggesting pulmonary fibrosis with normal heart size and pulmonary embolism ruled out. These findings absent in the study done 4 days ago. Diagnosis of interstitial pneumonitis with bilateral pleural effusion probable due to nitrofurantoin use was made, accordingly to the Naranjo Adverse Drug Reaction Probability Scale score of 6. The medication was replaced by ceftriaxone, and furosemide added. The patient's symptoms rapidly improved and was discharged home 3 days later with Cephalexin. 10 days after discharge continues to do well, normal findings on physical exam and chest-XR showed nearly resolved bibasilar interstitial infiltrates and bilateral pleural effusions.
Discussion: Nitrofurantoin is an antimicrobial drug recommended as first-line treatment for uncomplicated urinary tract infections (UTIs), as well as prophylaxis for recurrent UTIs. The most common side effects include nausea, vomiting, diarrhea, and very rarely, pulmonary toxicity. This may range from acute, subacute, or chronic. Both acute and subacute reactions are thought to be secondary to a hypersensitivity reaction and are dose independent. In contrast, chronic reactions are related to the total lifetime dosage. Nitrofurantoin-associated pulmonary injuries are reported in less than 1% of patients, 85% in women, due to a higher incidence of UTIs, and increases with aging. "The first case of acute pulmonary toxicity due to nitrofurantoin, demonstrating a clear cause-and-effect relationship by intentional re-challenge with the drug, was reported by Israel and Diamond in 1962." Acute reactions occur in approximately 1/5,000 patients after first exposure and are categorized as rare but are the most common clinical presentation (83%), characterized by fever, shortness of breath, cough, and peripheral eosinophilia within 1-month of starting nitrofurantoin therapy. In 90% of the cases, chest-XR show diffuse parenchymal changes or mixed interstitial alveolar shadowing in the lower zones, with pleural effusions. CT findings will report bilateral ground-glass opacities in the acute phase and a mixed picture of ground-glass, consolidation, and fibrosis in chronic presentations. The laboratory can show leukocytosis, peripheral eosinophilia, and high erythrocyte sedimentation rate.Early diagnosis is vital but often difficult to do, as most patients are initially treated for pneumonia, myocardial infarction, pulmonary embolism, heart failure, acute exacerbation of chronic diseases, etc. Delaying the correct diagnosis and initiating unrelated and empiric treatments, increase morbidity and mortality. The Naranjo Scale aids in making a diagnosis. It is a handy tool and indicates if there is a doubtful, possible, probable (like this case), or definitive probability that the injury was drug-induced accordingly to the score. Treatment is immediate discontinuation of nitrofurantoin, with marked clinical improvement in 24h. Additional treatments may be granted, such as respiratory support. The use of steroids is somewhat controversial. Prognosis is excellent, with a 0.5% mortality. Patients with pulmonary adverse reactions to nitrofurantoin should also carry written warnings about re-exposure, and the medication should be avoided.

38. Diffuse Alveolar Hemorrhage and Posterior Reversible Encephalopathy Syndrome Associated with Rituximab Initiation in a Patient with Mixed Cryoglobulinemia

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Background: Cryoglobulinemia is defined as the presence of one or more immunoglobulins in the serum that precipitate at temperatures below 37ºC and dissolve again on rewarming. It is usually classified into three subgroups type 1, which is seen exclusively in clonal hematologic diseases, type II, and III, which are called mixed cryoglobulinemia, and are usually seen in hepatitis C infection, connective tissue disorders and B-cell malignancies. Clinical manifestations may range from mild classic symptoms like purpura, arthralgia, and weakness, to severe manifestations like cutaneous ulcers, neuropathy and, acute kidney injury, or life treating presentations with intestinal ischemia, rapid progressive glomerulonephritis, and diffuse alveolar hemorrhage, with a high mortality rate for the last one. Rituximab constitutes the first-line agent for patients with severe manifestations. However, rituximab has been associated with flares of cryoglobulinemic vasculitis in rare cases. Here, we report a case of a patient with mixed cryoglobulinemia who developed diffuse alveolar hemorrhage and posterior reversible encephalopathy syndrome after rituximab initiation.

Case Description: 51-year-old female with past medical history of hypothyroidism and cryoglobulinemia who was started on rituximab one month prior to this admission. Patient presented to the emergency department after an episode of generalized tonic-clonic seizure. On admission, tachypneic and hypoxic requiring non-rebreather mask, with a GCS 5/15. Physical exam disclosed a generalized petechial rash in abdomen as well as multiple purpuric ulcerated lesions in lower extremities. Lungs with diffuse crackles bilaterally. Patient was admitted to the intensive care unit, intubated. Laboratory revealed anemia (6.9 gr/dl) and leukocytosis (27000/mm3), creatinine of 1.5mg/dl. Urinalysis with microscopic hematuria. Arterial blood gas with hypoxemia and hypercapnia. Chest X-rays with diffuse bilateral infiltrates. CT head revealed hypodensities in the occipital lobes. MRI of the brain with abnormal T2/flair signal in the occipital lobe suspicious for posterior reversible encephalopathy syndrome. Her course was complicated by hemoptysis requiring emergent bronchoscopy, which revealed oozing from all the lung segments. SPEP showed faint bands in IgG kappa, IgA kappa, IgM kappa and lambda. Bone marrow biopsy was negative for malignancy. She was diagnosed with a cryoglobulinemic flare and five sessions of plasmapheresis were completed along with pulses of methylprednisolone. Patient was extubated, AKI resolved and, vasculitic lesions improved substantially. She was subsequently discharge on prednisone 20 mg daily.

Discussion: Mixed cryoglobulinemia occurs as a result of a B-cell lymphoproliferative process characterized by the presence of monoclonal/polyclonal IgM with rheumatoid
factor and polyclonal IgG in the setting of persistent immune activation triggered by chronic infection and autoimmune diseases. The involvement of organs other than the kidneys is characteristic of mixed cryoglobulinemia and pulmonary manifestations such as diffuse alveolar hemorrhage carries a high mortality rate. Rituximab combined with corticosteroids is the first line therapy in patients with severe manifestations. However, in a cohort study of 185 patients treated with rituximab a vasculitic flare was identified in 3.4% of the patients after a median time of 8 days. Both, rituximab and cryoglobulinemia have been associated with the development of PRES and diffuse alveolar hemorrhage. Our patient developed a flare with multiorgan involvement manifested by worsening skin ulcers, acute kidney injury, diffuse alveolar hemorrhage and PRES after she was started on rituximab. Although rare, rituximab-associated vasculitic flare is associated with a high mortality rate despite aggressive treatment for which high index of suspicion by clinicians is crucial.

39. An Atypical Variant of Takotsubo Cardiomyopathy (TC): Mid-Ventricular Ballooning Syndrome

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Background: Takotsubo Cardiomyopathy (TC) is a STEMI mimic characterized by non-obstructive CAD and transient systolic regional wall motion abnormalities (RWMA) of the left ventricle. TC's presentation is more likely to be typical (involving the cardiac apex) than atypical (mid-ventricular, basal, focal, or global). > 80% of patients are documented as typical. The remaining fractions are atypical, with around 15% accounted for as Mid-Ventricular Ballooning Syndrome.
Case Description: The case describes a 53-year-old female with a past medical history of anxiety and hyperlipidemia who presented to the ED with substernal chest pain after undergoing an outpatient esophagogram. Vital signs were stable and physical exam was negative as were imaging studies. Serial EKGs and troponins yielded a diagnosis of NSTEMI. Troponins peaked at 2.56. Left heart catheterization (LHC) yielded normal coronary arteries, but left ventriculogram displayed mid-ventricular akinesis with a borderline depressed left ventricular ejection fraction (LVEF) of 45%. Sonography confirmed the same. She was started on low-dose metoprolol and lisinopril post-operatively.
Discussion: Per systematic reviews, TC represents up to 2.2% of patients with troponin-positive Acute Coronary Syndrome (ACS). Overall, affected patients are more likely to be postmenopausal women above age 60 with chest pain and shortness of breath following a physically or emotionally stressful event. Greater than 70% of patients present with ST-segment elevation and mild troponin elevation. LHC is followed by guideline-directed medical therapy with RAS inhibitors and beta-blockers in the setting of depressed LVEF. Said RWMAs are expected to recover within six weeks. 2% of patients perish in-hospital and 96% fully recover with minimal to no recurrence.

40. A Second Case of Malaria in a Pregnant Patient in the Same West Texas Hospital

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Background: Malaria in pregnancy is a serious global health concern leading to poor maternal and fetal birth outcomes. Although not endemic to the United States and specifically West Texas, ease of international travel has made malaria a legitimate concern for pregnant women and providers everywhere. It is critical to keep non-endemic infectious diseases in the differential when treating patients with febrile illness as early recognition and treatment is key to minimizing maternal and fetal morbidity.
Case Description: We present a case report of a Rwandan female at 28 weeks' gestation with acute presentation of fever, headache, myalgias and diagnosis P. falciparum malaria after travel from East Africa. Although initial presentation was nonspecific, subsequent evaluation and multidisciplinary care allowed for appropriate diagnosis and treatment of her acute illness with inpatient hospitalization and anti-malarial medications. After successful treatment and eradication of the parasite she was able to continue to the pregnancy and deliver at term via planned repeat cesarean section without maternal or fetal consequences.
Discussion: Although malaria is not endemic to Texas and the prevalence is extremely low with only 170 cases reported in Texas in 2016, this is the second report of a pregnant patient with malaria in the same West Texas hospital in the last 2 years. It is clear that this is not just a single isolated case. Non-endemic travel associated diseases must be considered in the differential diagnosis in patients presenting with infectious symptoms, especially in the high-risk pregnant population.

41. Acute Fatty Liver of Pregnancy and the Associated Complications

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Case Description:29-year-old G5P2022 at 36 weeks' gestation with di-di twins comes to labor and delivery for contractions and complaining she feels generally ill over last six days. Husband reports her "eyes look yellow." Exam and vitals normal except patient appeared mildly jaundiced. Fetal heart rate tracing demonstrated category II fetal heart tracing with recurrent late decelerations of baby A. Emergency cesarean was called. Cesarean was uncomplicated. Shortly after delivery hemoglobin and platelets began to sharply drop. Patient diagnosed with acute kidney injury (Cr 4.7) and a coagulopathy (DIC). Complete metabolic panel showed elevated liver enzymes (AST 719, ALT 598), and low glucose at 45 mg/dL. Other labs included a bilirubin12.6, LDH 1,691, uric acid 13.1, lipase 55, PT 47.9, INR 5.35, PTT 71.1, fibrinogen <60Thiswas further evidence of the diagnosis of acute fatty liver of pregnancy.
Shortly after delivery patient was transferred to the ICU on postoperative day #1 due to her AKI and coagulopathy. She later underwent US guided paracentesis and exploration of her abdomen to evacuate hemoperitoneum, no source of bleeding ever found. In order to stabilize and reverse the coagulopathy, the patient in total eventually received 19 units of PRBC's, 16units of FFP, 6 units of cryo, and 5 units of Plts. She was discharged home on POD#11 unstable condition.
Discussion: During the course of her stay numerous specialties were consulted including critical care team, GI, general surgery, and nephrology. All agreed to the diagnosis of AFLP and recommended supportive care which included 7 days of ICU care then 4 days on either general medicine and postpartum floors.

42. Case Report: Ectopic Pregnancy with Negative Beta-HCG Testing

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Background: Ectopic pregnancy is an obstetric emergency and represents the leading cause of first trimester mortality in the United States. Diagnosis of ectopic pregnancy relies heavily on clinical suspicion in the setting of positive HCG testing and absence of intrauterine pregnancy inpatients presenting classically with abdominal pain, vaginal bleeding, and amenorrhea. Still, in many cases the diagnosis is unclear. In the absence of classic findings, the physician must take the entire clinical presentation into consideration so as not to miss the diagnosis.
Case Description: A 24-year-old G1P0010 presented to the emergency department with acute abdominal pain, vaginal bleeding, and a right adnexal mass but had negative Beta-HCG testing. After a period of observation with minimal clinical improvement she was taken to the OR at which point aright tubal ectopic pregnancy mass suspicious for ectopic pregnancy was identified and removed. Review of tissue by the pathologist confirmed the presence of scant chorionic villi within the specimen. Additional tissue stains including Cytokeratin, HPL, HCG, CD34, and Factor VIII were sent to help in confirming the diagnosis.
Discussion: Ectopic pregnancy should not be completely eliminated from the differential diagnosis if a pregnancy test is negative in a patient who otherwise fits the clinical picture. We submit this interesting

case to discuss our management and to add to the literature of this rare occurrence, as well as to discuss additional tissue stains that can be helpful in confirming the diagnosis.

43. Catatonia as First Presentation in an Undiagnosed Mood disorder: a Case Report and Literature Review

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Background: Catatonia is a condition with underlying medical or psychiatric etiology and usually indicates the severity of illness.
Case Description: An 18-year-old girl in her usual state of good health until 9 days prior to admission presented with seizure like movement, intermittent non-responsive, and excessive sleep. At admission, she was nonverbal and unable to follow commands. ECG, head CT, and a basic metabolic panel were within normal limits. Urine drug screening was negative. The patient's past medical and psychiatric history was unremarkable. The patient was empirically started on ceftriaxone, doxycycline, vancomycin and acyclovir, but these were discontinued when CSF culture and HSV, VZV, CMV results returned negative. Examination on the 2nd day revealed a young female with stereotyped movements, mutism, rigidity, and stupor. Catatonia was diagnosed after negative EEG, MRI and positive response for lorazepam challenge test. Over the next 10 days, the patient's condition gradually improved with treatment of 1mg lorazepam IM/PO q6hr. She exposed depressive symptoms later on. Patient discharged home with lorazepam 1mg daily and sertraline 50mg daily for new diagnosed mood disorder.
Discussion: It is rare that mild catatonia as early presentation of mood disorder. We reviewed similar catatonia cases in the young healthy population with different underlying illness, such as B12 deficiency, autoimmune encephalitis, autism spectrum disorder and conversion disorder. It is important to timely consider and confirm catatonia so that patients get effective treatment and favorable prognosis. Our case suggests different mechanisms may be involved in the pathophysiology of catatonia.

44. Essential Thrombocythemia

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Background: Essential thrombocythemia (ET) is an acquired chronic myeloproliferative neoplasm characterized by the abnormal proliferation of megakaryocytes in the bone marrow and significant increases in platelet counts. JAK2 mutations are seen in 50-60%. The disease is associated with an elevated risk of hemorrhage, thrombosis, and vasomotor symptoms.
Case Description: A 66-year-old female with no significant medical history presented to the emergency department with cardiogenic shock due to acute coronary syndrome; gastrointestinal (GI) bleed, acute blood loss anemia (Hgb 7.3) and thrombocytopenia (3,148 x 109/L). Coronary intervention and GI endoscopy were postponed due to patients' unstable conditions requiring blood product transfusion, vasopressors and protonix drip. Peripheral blood smear showed hypochromic cells with mature neutrophil, scattered lymphocytosis, and increased platelet number with scattered large platelets. With the diagnosis favoring essential thrombocythemia (ET), the decision was made to transfer the patient to a tertiary

medical center for plateletpheresis before any cardiac intervention. Patient also was started on dextran 500mg IV daily and Hydroxyurea 1mg PO daily for cytoreductive treatment.
Discussion: Diagnosis of ET requires blood tests and bone marrow biopsy along with genetic analysis. Genetic analysis of bone marrow of our patient revealed JAK2 (V617F) point mutation. Mainstay therapy of ET is directed to decrease hyperproliferation and production of platelets by using hydroxyurea, phlebotomies, anagrelide, recombinant interferon alfa, and ruxolitinib. However, these medications take time for maximum effect and are not helpful in urgent situations where rapid reduction of platelets are needed. Thus, plateletpheresis is a valuable treatment method for reducing the risk of hemorrhagic complications before emergent invasive procedures.

45. Aggressive Amnioreduction Improves Fetal Cardiac Function and Placental Perfusion in Fetal Arterial Calcification

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Case Description: 24 years old, G3P1101 patient without prenatal care, with history of infantile idiopathic arterial calcification (IIAC) and IUFD previous pregnancy, presented to labor and delivery at32w4d gestation with contractions and abdominal/back pain. Patient was monitored and found to have and a category II fetal heart tracing. Ultrasound examination revealed polyhydramnios with maximal vertical pocket (MVP) >17cm, poor cardiac contractility and excursion, and severe arterial calcification in the aorta and aortic valve, and hydrops fetalis. These findings were consistent with fetal IIAC. Amnioreduction (2.2L) was performed without complication. Placenta thickness noticeably increased, MVP reduced, and cardiac contractility and excursion visually improved. Right ventricle still had significant hypocontractility due to ductal atresia. After these interventions, the patient had an intrauterine fetal demise at 34 weeks and underwent a induction of labor.
Discussion: In presented here case polyhydramnios in Fetal IIAC was associated with decreased placental perfusion by approximately 44%. Our report is in line with the published data regarding negative correlation of AFI with placental thickness and increased placental perfusion and cerebral artery vasodilation after amnioreduction. Aggressive amnioreduction and increase in placental perfusion lead to improvement of biventricular hypo contractility. Thus, the strategy to increase placental perfusion might by beneficial for in-utero management of patients with IIAC in addition to proposed bisphosphonate therapy.

46. Unrecognized Graves' Disease, Postpartum Thyrotoxicosis and Heart Disease

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Background: Hyperthyroidism during pregnancy is known to be associated with pre-eclampsia, intrauterine growth restriction, pre-term labor, and c-section. Graves' disease, the most common cause of hyperthyroidism, affects approximately 0.2% of women during pregnancy.

Case Description: A 34yo now G5P0141 at 27w4d gestation presented with preterm pre-labor rupture of membranes (PPROM), shortness of breath (SOB), and preeclampsia with severe features including headache and severe-range blood pressures. She received routine preeclampsia and PPROM management. She additionally developed pulmonary edema. She was given IV furosemide and urgently taken for primary C-Section w/ delivery of a viable female infant that was admitted to NICU. She then received 24hr of magnesium sulfate for seizure prophylaxis Post-partum chest X-ray revealed cardiomegaly, perihilar infiltrates with congestive disease. Approximately 48hr postpartum, she went into atrial fibrillation with rapid ventricular response confirmed by EKG but was otherwise stable. She denied history of cardiac, thyroid or autoimmune disorders. She received Diltiazem and converted quickly. CT PE showed pulmonary edema and diffuse goiter. TSH was low with elevated T3/T4, and ultrasound showed a goiter without nodules. She had elevated thyroid peroxidase antibodies and thyroid stimulating immunoglobin, confirming Graves' disease. She was maintained on labetalol and methimazole, then followed up with Ob/Gyn, Endocrinology and Cardiology.
Discussion: After further review, it was noted this patient had unrecognized Graves' disease at the initial prenatal visit. This case shows the importance of recognition of hyperthyroidism in at-risk pregnancies to decrease morbidity and mortality.

47. JAK2-Negative Polycythemia Vera Self-Controlled by Bleeding of Colon Cancer Debuting as Iron Deficiency Anemia

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Background: Polycythemia Vera (PV) is a chronic myeloproliferative disorder characterized by clonal myeloid expansion. The etiology is unknown but has been associated with acquired/inherited mutation (JAK2, CALR and MPL). Its incidence is estimated to be 1-2/100,000 per year. There is no clear etiologic relation between PV and colon cancer (CC), although the latter has been associated with paraneoplastic secondary polycythemia.
Case Description: A 61-year-old male admitted for cholecystitis, was found to have iron deficiency during his hospital stay. The patient experienced fatigue and weight loss for 2 years. Hemogram showed hemoglobin 11g/dl, hematocrit (HCT) 35.3%, mean corpuscular volume 64fL and red cell distribution width 17.6%. Endoscopy showed multiple polyps at the cecum. Biopsy was positive for villous adenoma and right hemicolectomy was performed. Histopathology evaluation showed invasive adenocarcinoma. He was seen by oncology 2 months after discharge and prescribed chemotherapy. Although the JAK2 V617F mutation was negative erythropoietin level was 4IU/L, HGB 19.6g/dl, HCT 56% indicating primary polycythemia.
Discussion: Iron deficiency anemia is a common diagnosis commonly associated with gastrointestinal (GI)bleeding. After the surgical resection of the colon adenocarcinoma his hemoglobin abnormally increased. PV is not associated with CC nor chemotherapy. This uncommon presentation of PV was masked and somehow self-controlled by GI bleeding due to CC. Although the PV was preventing the development of severe anemia, this could've delayed the diagnosis of CC. Uncontrolled PV has been associated with deleterious operative outcomes (hemorrhage and thrombosis). Therefore, pre-operative assessment and abnormal counts should be optimized.

48. Nivolumab-Induced Myopericarditis

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Background: Nivolumab is a human monoclonal immunoglobulin G4 antibody to PD-1 (programmed cell death 1) It is an immune checkpoint inhibitor preventing the T cells from being inactivated by molecules or products produced by tumor cells. Thus, these activated T cells continue eliminating these cancer cells. Since we boost the immune system by activating the T cells, it certainly can cause immune-mediated side effects.
Case Description: Here we present a 77-year-old woman who was started on Nivolumab for her Stage 4A malignant melanoma, developed fatigue, proximal muscle weakness, inability to walk, drooping of eyelids and chest pain. EKG showed global ST and T wave changes with elevated troponin. Cardiac catheterization was negative for any culprit lesions. Elevated troponin, lactate dehydrogenase (LDH), creatinine kinase signifying myositis and in this case with a positive pericardial effusion representing nivolumab induced myo-pericarditis.
Discussion: Nivolumab and several such agents are more commonly used. Cancers that were once untreatable are now being controlled with these agents. We also have to know that these medication like any other will have several side effects. Immune mediated side effects are debilitating and should be treated aggressively. Myo-pericarditis is extremely rare and needs to be addressed as soon as possible.

49. Delayed Presentation of Drug-Induced Hepatic Injury

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Background: Drug induced liver injury is a leading cause of acute liver failure in the United States with an incidence of 10 per 100,000 persons. There are many offending agents including prescription drugs and herbal remedies, however the most common drug involved worldwide is Amoxicillin-clavulanate (Amox clav). The liver injury associated with Amox clav usually manifests within an average of 3-4 weeks from initial oral intake. While the exact pathophysiology is still unknown, the presence of eosinophilic infiltrates indicates that the cholestatic type injury caused by the antibiotic may be attributed to immunological factors. Withdrawal of the offending agent is usually the treatment course; however, corticosteroid therapy has been used in cases with severe cholestatic injury. The common risk factors include advanced age, male gender, alcohol intake, medical illness, as well as combination of other hepatoxic drugs. We report a case of delayed presentation of progressive severe cholestatic hepatitis secondary to Amox clav and treatment corticosteroids and ursidiol.
Case Description: A 20-year-old female patient with no medical history presented to the hospital with 5 days of nausea, vomiting, epigastric pain and yellowish discoloration of the eyes. She denied exposure to any medications, herbal supplements, illicit drugs and alcohol. Her labs revealed WBC of 13.5, hemoglobin 13.8, Platelet count 250, PT13.6. INR 1.04, Albumin 3.6, AST 39, ALT 57, ALP 207, total bilirubin 6.9, lipase 50, amylase 93, GGT 141, Ferritin 232, and Ceruloplasmin 51. Serologies for hepatitis viruses, HSV, EBV,

Autoimmune markers (ANA, AMA, ANCA) were negative. Ultrasound abdomen showed contracted, 6mm dilated gallbladder. MRCP was negative for any biliary obstruction. Liver biopsy demonstrated dense portal infiltrate dominated by neutrophils and eosinophils in the periductal region. The histology from the liver biopsy is most consistent with acute large duct obstruction complicated by ascending cholangitis or Drug induced cholestatic hepatitis. On further questioning the patient, admitted that she was treated for sinusitis with amoxicillin – clavulanate 4 months prior to admission.

Discussion: Drug-induced liver disease is often difficult to diagnose and is often overlooked in clinical practice. Essential diagnosis ingredients include a detailed pharmacologic history, the exclusion of other causes of liver damage, and the establishment of a temporal relationship between initiation of drug therapy and the onset of clinical signs and symptoms. In our patient, the first manifestations of liver involvement appeared 110 days after discontinuation of the drug. Several parameters for the diagnosis of drug-induced hepatitis were satisfied, such as definitive exclusion of alternative causes and also previous reports in the literature of adverse hepatic reactions associated with Amox-clav. No specific treatment for drug-induced liver injury exists. Early recognition with prompt discontinuation of the offending agent will prevent further hepatic compromise, ameliorate symptoms and hasten the resolution of the illness. Some studies have reported that UDCA arrested drug induced cholestasis. Due to possible immunological mechanisms the use of corticosteroid treatment in severe cases with elevated bilirubin have been implicated. While it may be beneficial and reverse hepatic injury there is no evidence of reduced morbidity. In our patient, corticosteroids were used to treat progressive drug-induced cholestasis along with UDCA therapy. Their use was justified not only by continuous worsening of the cholestasis, but also by the absence of any signs of improvement during the observation period. Although clear evidence of liver damage due to immune hypersensitivity was absent, only steroid therapy resulted in prompt resolution of symptoms, disappearance of jaundice, normalization of transaminases and bilirubin levels. A pertinent factor in the case which made diagnosis difficult was the denial of the patient to any drug or medication use in the recent past. This case also emphasizes the need for through anamnesis with careful verification for drug induced causes and delayed presentation of Amoxcillin/Clavulunate induced cholestasis.

50. Air Embolism during Removal of a Central Venous Catheter

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Background: We report a case where the patient developed an air embolism during removal of a central venous catheter.

Case Description: A 53-year-old female with a past medical history of IV drug abuse and severe cachexia and COPD was admitted with sepsis secondary to left shoulder septic arthritis and multiple skin abscesses. She underwent a prolonged course of IV antibiotics, I&D of abscesses and left shoulder joint washout. Due to difficult IV access, an internal jugular central venous catheter (CVC) was placed. Decision to remove the CVC was made when the patient showed some clinical improvement. Within a few seconds of CVC removal with the patient sitting upright, she became tachypneic and tachycardic, using accessory muscles of respiration. Vitals showed oxygen saturation of 78%. Physical exam revealed clear lungs. Chest x-ray was negative for pneumothorax. ABG analysis showed acute hypoxic hypercarbic respiratory acidosis. There was high suspicion for air emboli which was confirmed on bedside ultrasound. Patient was transferred to ICU where she was emergently intubated and mechanically ventilated on 100% FiO2 while placed in Trendelenburg position. The next day, a transthoracic echo showed no more signs of air embolism. The patient improved quickly and was extubated.

Discussion: Proper care and technique such as explaining the procedure to the patient, laying the patient in supine position and instructing the patient to do Valsalva, all are crucial steps in safe removal of CVCs. Nurses should be provided with guidance for the safe removal of CVCs and ensure safety by reducing the risk of potential complications.

51. Repeated Relapse of ANCA Vasculitis in Transplant Kidney

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Background: Renal transplantation in ESRD associated ANCA vasculitis patients has shown to improve survival rate, quality of life and less relapse rates when compared to patients on maintenance hemodialysis. Recurrence is very rare especially with the new immunosuppressive therapies. We present a patient with second recurrence after renal transplant in spite of being on good immunosuppressive regimen.

Case Description: 58 years-old Hispanic male with PMH uncontrolled Type 2 DM, HTN, underwent renal transplant in2012 for ESRD secondary to renal limited p-ANCA vasculitis. He developed biopsy proven recurrent ANCA vasculitis of transplant kidney in Nov 2018, completed treatment with rituximab infusions and prednisone. He was placed on mycophenolate, cyclosporine and low dose prednisone maintenance therapy. After 14months of complete remission, patient came back again with symptoms of increased frothing of urine, bilateral lower extremity swelling, glucosuria, nephrotic range proteinuria, microscopic hematuria and worsening creatinine. Repeat renal biopsy showed acute on chronic Pauci immune glomerulonephritis. He was treated with pulse dose methylprednisolone along with weekly rituximab infusions for4 weeks. Cyclosporine and Mycophenolate are continued throughout. He was discharged on tapering dose of prednisone, mycophenolate and cyclosporine. On the day of discharge patient's symptoms and creatinine improved and is back to his baseline.
Discussion: Relapse rate of ANCA associated glomerulonephritis after renal transplantation is 0.006—0.08per patient per year. Data regarding repeated relapses and related treatment guidelines in transplant kidney is scarce. Use of rituximab for recurrent AAV in post-transplant kidney is limited only to case reports.

52. A Case of Sarcoidosis with Ocular Signs Mimicking Orbital Lymphoma

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Background: Cases of Orbital inflammation with palpable masses are generally worked up as lymphoma however diagnosis of sarcoidosis must be kept in mind as shown by the case report. Sarcoidosis is a chronic multisystem granulomatous disorder characterized by non-caseating granulomas. Ocular involvement occurs in 25% of patient (1).

Case Description: A 66 yrs. female with history of obesity, DM and Osteoarthritis presented with subacute and progressive swelling and blurring of vision in right eye with inability to open eyelid. No complaints of nausea, vomiting, no joint pain or respiratory complaints, no B symptoms. Visual acuity was 20/50. Edema, ecchymosis of Right upper eyelid with orbital masses felt in superonasal and superolateral region. CT scan revealed masses in the anterior orbit with lacrimal gland involved. Biopsy in suspicion of orbital lymphoma done, revealing unusual lymphoid hyperplasia. Flow cytometry: mixed lymphocyte without monoclonal B cell or aberrant T cell antigen expression. FISH obtained for low grade lymphoma: BCL-2rearrangement negative, MALT-1 negative, IGH equivocal. (3) To prevent vision loss started on prednisone, with remarkable improvement swelling, puffiness of the eye, visual acuity. CT scan of the CAP , done , revealed subcarinal lymphadenopathy(5.8 cm) with no parenchymal mass, no lymphadenopathy below diaphragm and no hepatosplenomegaly. PET scan showed Sub carinal node 1.6cm in short axis SUV of 4, No PET/CT evidence for active lymphoma identified elsewhere. EBUS guided subcarinal lymph node biopsy revealed non caseating granuloma. The patient responded well to steroid, later initiated on methotrexate to prevent flare up. (4)
Discussion: Orbital sarcoidosis has diverse clinical presentation including lacrimal gland infiltration, orbital mass (2). Thus, in elderly patient presenting with orbital inflammation, sarcoidosis must be kept in mind in addition to lymphoproliferative disorders.

53. Triple Threat

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Background: Immunosuppression in any form predispose patients to develop dreaded opportunistic infections. Commonly seen in patients with untreated HIV, patients with any type of cancer on chemotherapy, transplant patients and patients on long term steroids. Very common to diagnose infections such as Pneumocystis jiroveci (PCP), cytomegalovirus (CMV), aspergillus, cryptococcus and mycobacterium avium complex (MAC) in immunosuppressed individuals. But it is not common to diagnose 3 opportunistic co-infections in one immunosuppressed host.
Case Description: 67-year-old female, diagnosed with stage IIIE (plasmacytoid variant marginal zone NHL) with large right thigh mass, started on Cyclophosphamide, Doxorubicin, Vincristine, Prednisone with Rituximab (R-CHOP) for 2 sessions. She developed progressive shortness of breath, productive cough, was admitted to the ICU for acute hypoxic respiratory failure. Bronchoalveolar lavage (BAL) was done to narrow down the diagnosis as she had bilateral interstitial and ground-glass opacities, and she was PCR positive for PCP, CMV and Aspergillus. She was started on intravenous voriconazole, Bactrim and ganciclovir. A-a gradient substantially improved and was discharged home on oral medications for lifelong maintenance.
Discussion: 3 different organisms causing co-infection in an individual is extremely rare. We then face a dilemma whether to treat for all these organisms aggressively with potentially toxic medication. Multi organism co-infection is extremely rare and should be considered in individuals who are immunosuppressed.

54. Atypical Takotsubo Cardiomyopathy: Transient Mid-Ventricular Akinesia in Early Bereavement Period

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Background: Takotsubo cardiomyopathy (TTC) also known as stress-induced cardiomyopathy or broken heart syndrome is a form of acute heart failure syndrome characterized by transient left ventricular (LV)dysfunction paired with segmental wall motion abnormalities. It was first described by Sato in 1990.TTC is divided in typical and atypical type based on the imaging findings. The typical TTC is defined by the presence of left ventricular apical ballooning whereas the atypical type is defined by midventricular, basal or focal wall motion abnormalities.
Case Description: A 41-year-old female with history of panic attack and chronic tobacco habituation presented to the emergency department with acute onset severe chest pain. She was just notified that her father passed away, and the patient developed a pressure-like sensation followed by retrosternal chest pain. The electrocardiogram showed no abnormalities. Initial serum troponin levels were negative but 5 hours later serum levels increased to 0.46ng/mL. Urgent coronary angiography revealed normal coronary arteries anatomy. On left ventriculography, the basal constrictors and apex were contracting normally, the mid ventricle was akinetic consistent with atypical Takotsubo cardiomyopathy.
Discussion: TTC is an infrequent disorder with an estimated prevalence of 1-2% of all patients presenting with acute coronary syndrome (ACS). The pathophysiologic mechanism is unknown. The most accepted hypothesis is an exaggerated sympathetic stimulation resulting in direct catecholamine-mediated myocardial stunning. These patients have a high prevalence of neurologic/psychiatric conditions. Early bereavement period has been associated with poor cardiac outcomes in patients with ACS/TTC. There are no specific recommendations regarding the management of TTC. Current strategies are mainly supportive.

55. Sporadic, Classic-Type Renal Angiomyolipoma with Renal Vein and Inferior Vena Cava Extension: An Incidental finding

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Background: Renal angiomyolipomas (AML) were first described in the early 1900's by Gravitz, but it was not until 1951 that they were named renal AML. These kidney tumors are rare, occurring in0.2–0.3% of the population. These mesenchymal tumors are composed of three cell types: smooth muscle-like, adipocyte-like, and epithelioid. Depending on the predominant cell population it can be further sub-classified in: Classic (triphasic), Epithelioid (monotypic, >10%epithelioid cells) and AML with epithelial cyst.
Case Description: A 32-year-old female, presented with mild, intermittent, epigastric and right upper quadrant abdominal pain for the last 3-4 months. The physical examination was unremarkable. Abdominal ultrasound revealed an incidental lesion within the inferior vena cava (IVC). A computed tomography scan showed a lesion within the left renal vein extending into the IVC with 40% narrowing and a fat-containing mass in the lower pole of the left kidney of 15mmsuggesting a AML. Thrombectomy was performed. The specimen resulted positive for classic variant renal AML.
Discussion: Initial diagnosis is centered on imagining studies, based on the fatty tissue concentration inside the tumor. The AML expresses melanocytic markers (HMB45 and Melan-A/MART-1). This might

help differentiate from renal cell carcinoma. Although AML is considered a benign condition, there is evidences of malignant transformation. Active surveillance is recommended for lesion <4cm. Nephron sparing surgery is the procedure of choice. Nephrectomy is not recommended unless there is high probability of malignancy. Mammalian target of rapamycincomplex-1 inhibitors has been proposed to be an alternative treatment in sporadic AML.

56. Extensive Subcutaneous Emphysema due to Failed Endotracheal Intubation with Vallecular Rupture

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Background: Vallecular rupture (VR) is a rare and potentially life-threatening condition that could have a deleterious outcome due to upper airway and jugular venous compression. Post-intubation airway rupture (PiAR) is a rare condition associated with emergent endotracheal intubation (EEI), the most common type with a prevalence less than 0.37% in the general population. VR is less common. Its prevalence associated with subcutaneous emphysema (SubE) preceded by EEI is unknown.
Case Description: An 84-year-old female with multiple comorbidities was transferred from an outside facility with history of failed tracheal intubation after an episode of syncope preceded by severe shortness of breath. Upon arrival to the emergency department the patient was noted to be unresponsive. Physical examination depicted palpable cutaneous crepitus compatible with extensive SubE extending from bilateral upper thighs to the head. Direct laryngoscopy revealed a laceration on the left vallecula. Bronchoscopy was unremarkable; tracheotomy was done without complications.
Discussion: Initial diagnosis of PiAR is based on clinical suspicion. The signs and symptoms are subcutaneous emphysema, respiratory insufficiency and pneumothorax in the context of failed EEI. VR is thought to be secondary to anterior laryngoscope stylet traction over the vallecular portion of the oropharynx during upper airway exploration in endotracheal intubation. Diagnostic confirmation is made by laryngoscopy and bronchoscopy. Extensive SubE secondary to tracheal rupture has traditionally been managed with urgent surgical repair, though nowadays there is an increased tendency to advocate conservative treatment. SubE is a protective factor, as it favors early diagnosis and initiation of appropriate treatment.

57. Diabetic Myonecrosis: A Case Study

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Background: Diabetic myonecrosis is a rare complication of diabetes mellitus with less than 200 cases reported in the literature since initial description in 1965. Diabetic myonecrosis most commonly affects the thigh and usually presents with acute muscle pain, edema, and erythema in the absence of trauma or fever. MRI is the diagnostic modality of choice for diabetic myonecrosis which is both sensitive and specific for the diagnosis.

Case Description: 76-year-old male with T2DM presented to regional hospital with severe right lower leg pain in the absence of fever, tachycardia, hypotension, or recent trauma. Physical exam demonstrated discrete erythema of distal 2/3 of posterior right lower leg extending to the ankle distally. Labs demonstrated normal CK, elevated ESR, HgbA1c 8.2%, and negative blood cultures. MRI of the right lower extremity demonstrated abnormal prolongation of T2 relaxation time involving posterior muscle compartment including soleus and gastrocnemius. These findings were consistent with diabetic myonecrosis without evidence of osteomyelitis or abscess. Rest, optimal glycemic control, and aspirin were recommended, and patient improved gradually.
Discussion: Diabetic myonecrosis is a rare complication of diabetes and should be considered in patients presenting with acute muscle pain. Among cases described in literature, 5.7% have affected the soleus and 5% have affected the gastrocnemius respectively. The diagnostic modality of choice is contrast enhanced MRI with typical findings including hyperintense signal on T2weighted images with associated muscular, perifascial, and/or subcutaneous edema. The optimal treatment is yet unknown, but reasonable strategies based on case series include rest, glycemic control, and NSAID therapy.

58. An Incidental Finding of Abdominal Coccidioidomycosis in an Elderly Male Presenting with Abdominal Pain

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Case Description: 90-year-old male immigrant from Mexico with a past medical history of cerebrovascular accident, hypertension, anxiety disorder and basal cell carcinoma who presented to the emergency department with complaints of vague generalized abdominal pain of 3-4 hours. His physical exam demonstrated right upper quadrant tenderness with a positive Murphy's sign. Initial laboratory investigations at the emergency room showed significant findings of leukocytosis, elevated total bilirubin and alkaline phosphatase. Abdominal imaging with computed tomography demonstrated extensive cholelithiasis with gallbladder wall thickening and pericholecystic fluid. The patient had a cholecystectomy on second day with finding of multiple nodules throughout the abdominal cavity concerning for neoplasm or an atypical infection. Biopsy of his omentum demonstrated benign tissue with multiple epithelioid granulomata, gram stain was positive for coccidioides organism and was negative for malignancy.
Discussion: Cocidioidomycosis is an infection caused by a fungal organism called *Coccidioides immitis* or *Coccidioides posadasii*. It is highly endemic in the Southwestern states of the US where it accounts for an increasing number of pulmonary infections. Intraabdominal coccidioidomycosis is a relatively rare condition, when this occurs, it should raise suspicion for immune compromise. This fungal is transmitted through inhalation of airborne spores. Primary infection is asymptomatic in about 60% of cases. Gastrointestinal involvement is a rare extrapulmonary manifestation of coccidioidomycosis. The diagnosis can be established by microscopic examination for identification of coccidioidal spherules in cytology or tissue specimen, culture of the peritoneal fluid obtained by paracentesis and positive serologic testing for antibodies to coccidioidal antigens. Treatment is with antifungals.

59. Jehovah Witness with p-ANCA Vasculitis

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Background: Microscopic polyangiitis is inflammation of the small vessels. Annual incidence of MPA is 3.6 cases per million persons. P-ANCA vasculitis has various modalities of treatment with several different combinations. There is plasmapheresis used in an acute setting with corticosteroids. Then there is immunosuppressants such as cyclophosphamide or mycophenolate mofetil. The newer agents/monoclonal antibodies such as rituximab have been used in combination with apheresis. But the question to choose becomes even harder when the patient's religious beliefs become contraindications to use a particular modality.
Case Description: 60-year-old female with a recent coronary artery bypass surgery presenting with shortness of breath. CT thorax showed severe diffuse bilateral alveolar infiltrates, acute blood loss anemia and hematuria with proteinuria. Bronchoalveolar lavage provided the diagnosis of diffuse alveolar hemorrhage (DAH). Vasculitis panel was positive for p-ANCA/MPO-ANCA antibodies giving us a specific diagnosis of ANCA associated vasculitis induced DAH and glomerulonephritis. The patient did not wish to have any blood transfusion or plasmapheresis as she was a Jehovah witness. She also would not be a candidate for cyclophosphamide infusion due to bone marrow suppression that can worsen her anemia and could potentially hamper her recovery. With limited options, patient was started on rituximab infusions alone and showed considerable recovery. Her DAH and anemia resolved. Renal function improved.
Discussion: Treatment of microscopic polyangiitis is difficult. Considering the severity, it poses, potential to develop ESRD and dialysis dependence. In certain cases, with diffuse alveolar hemorrhage there increase chances of ventilator dependence and even death. Cases with religious beliefs can be harder to treat. This patient had strict rules not to use blood products, plasmapheresis. Was a contraindication for cyclophosphamide use as it could potentially cause bone marrow suppression? So, she was started on rituximab alone with considerable benefit.

60. Fenofibrate-Induced Erectile Dysfunction

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Background: Fibrate derivatives are recommended as first line therapy for isolated triglyceride elevation. This case is about a 68-year-old Hispanic male who experienced inability to obtain an erection a week after starting Fenofibrate. Male erectile dysfunction (ED) is defined as the inability to attain or maintain penile erection sufficient for satisfactory sexual performance. High levels of total plasma cholesterol and low levels of high-density lipoprotein are associated with an increased prevalence of ED. However, increased risk of ED has been reported in patients treated with fenofibrate derivatives. The mechanisms by which fenofibrates lower lipoprotein levels causes ED remain unclear. Further studies are needed to assess the mechanism of ED caused by fenofibrates. Clinical data, however, indicate that the benefits of fenofibrate still outweigh its associated risks.
Case Description: A 68-year-old Hispanic male with history of hypertension and mixed hyperlipidemia, on Lisinopril and Atorvastatin who later was started on Fenofibrate for elevated triglyceride levels, who developed ED a week after initiating therapy. His testosterone level was within normal limits, so hypogonadism was ruled out as a cause of sexual dysfunction. His symptom could not be attributed to his

risk factors of hypertension and hyperlipidemia since he did not experience sexual dysfunction until fenofibrate therapy was begun. The temporal relationship between the start of Fenofibrate and the patient's sexual dysfunction suggests that this drug may have caused his dysfunction. His improved sexual function after the drug was discontinued further supports this argument.
Discussion: Hyperlipidemia and Hypertension are well known risk factors for the developing of Erectile Dysfunction. It is difficult to distinguish the effect of underlying disease and adverse effects of the drugs. Lipid-lowering therapy in hyperlipidemia with fenofibrates and statins yield substantial health benefits such as diminished coronary events and deaths. Although fenofibrate is generally well tolerated, the most common adverse effects are gastrointestinal disturbances, paresthesia, hepatotoxicity, and myopathy. In less than 1% of cases studied, ED was reported as an adverse reaction. The mechanisms by which fenofibrates lower lipoprotein levels causes ED remain unclear. Further studies are needed to assess the mechanism of ED caused by fenofibrates. Clinical data, however, indicate that the benefits of fenofibrate still outweigh its associated risks.

61. Incidental Hepatocellular Carcinoma in a Patient with Primary Aldosteronism

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Background: Primary aldosteronism (PA) is characterized by hypertension, hypokalemia, suppressed renin activity and increased aldosterone excretion and was first described by J. W. Conn in 1955.PA occurs most commonly due to aldosterone-producing adenoma (Conn's syndrome, 75%),and less commonly due to adrenal hyperplasia (25%) or adrenocortical cancer (1%). Some studies have shown an association between baseline aldosterone levels and malignancy prevalence. We report a case of a patient with a bilateral nodular adrenal hyperplasia and coexisting hepatocellular carcinoma.
Case Description: Mr. B is a 57-year-old male with HTN and previous Hepatitis C infection, who presented for persistent hypokalemia requiring daily supplements following multiple ED visits. His blood pressure was 143/94 mmHg, and patient referred only intermittent bilateral lower extremity cramping. No clinical features of hypercortisolism where noted. Labs: K: 2.6 (3.4-4.9mmol/L): Plasma Aldosterone: 37 (4.0-31.0 ng/dL); Plasma renin: 0.1 (0.5-4.0 ng/mL/Hr);PRA: 370 (<25). Results were consistent with PA. Abdominal CT showed bilateral nodular lesions (1.9cm and 7mm), consistent with bilateral nodular adrenal hyperplasia. Incidentally two hepatic masses were seen. Biopsy revealed hepatocellular carcinoma. His PA was managed medically in preparation of definitive treatment of his cancer.
Discussion: Early detection of PA is key for prevention of cardiovascular morbidity and mortality. Lang et.al., recently showed that patients with a history of malignancy had higher baseline aldosterone levels at diagnosis of PA. Whether aldosterone excess might be a contributing factor in the pathogenesis of malignancies is yet unknown. This would have important implications in clinical management of patients found to have PA.

62. Isolated Adrenal Insufficiency in a Patient with Probable Lymphocytic Hypophysitis

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Background: Lymphocytic Hypophysitis (LH) resulting in lymphocytic infiltration and destruction of the pituitary gland is a rare autoimmune-mediated disease occurring most often in women associated with the perinatal period. The annual incidence of LH is estimated at one case per9 million. LH has an extensive spectrum of clinical presentations, ranging from mild hormone deficiency with normal radiology, to progressive and rapid deterioration and death. We describe a case of a 19-year-old female who developed isolated ACTH deficiency with strong clinical evidence of LH.
Case Description: A 19-year-old female presented to the Emergency Department because of an abnormal lab result, generalized weakness and weight loss. She gave birth approximately 7 weeks prior to hospital admission. On day two post-partum, she had a seizure associated with a blood sugar of 17mg/dL. Since that time, she describes two syncopal episodes upon standing, decreased appetite, intermittent abdominal pain, and weight loss. Labs showed: Cortisol: 0.16mcg/dL(n=3-16mcg/dL); TSH: 0.63uIU/mL (n=0.34-5.6uIU/mL); FT4: 2.11ng/dL(n=0.80-1.80ng/dL);Total T3: 166 (n=83-215); Prolactin level: 67 (n=2-26). The other anterior pituitary hormone levels were normal. MRI showed a normal sized pituitary with no mass lesion, and normal pituitary stalk thickness. Symptoms dramatically improved with the addition of hydrocortisone.
Discussion: This is strongly suggestive of LH given the clinical presentation and isolated ACTH deficiency. LH could easily be missed due to its rarity and lead to marked morbidity and possible mortality. In clinical practice, it is crucial to have a strong clinical suspicion and pursue timely biochemical and imaging studies to initiate prompt treatment.

63. Methyldopa Protects Pregnancy, Delays Diagnosis of Pheochromocytoma

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Background: Preeclampsia, gestational and essential HTN account for majority of cases of hypertension in pregnancy. Secondary causes especially Pheochromocytoma is rare. Methyldopa is generally accepted treatment for hypertension in pregnancy. This case describes how treatment with methyldopa contributed to favorable pregnancy outcome and delayed the diagnosis of Pheochromocytoma.
Case Description: A 35-year old post-partum female was seen on consultation for hypertensive urgency. She complained of intermittent headaches, labile blood pressure of two-year duration. Symptoms worsened during the second trimester of recent pregnancy when preeclampsia was diagnosed and treated with methyldopa. A healthy baby was delivered by cesarean section 3 months prior. Post-partum blood pressure improved, and methyldopa was discontinued. Her symptoms recurred a few weeks later. Methyldopa was resumed and subsequently metoprolol resulting in current admission. Given her presentation Pheochromocytoma was a concern. Further workup revealed high levels of plasma metanephrines 11.20 nmol/L (nl < 0.49), normetanephrines 6 nmol/L (nl < 0.89), 24-hoururinary metanephrines 8841 mcg/ g Cr (nl < 300) and normetanephrines 2149 mcg/ g Cr (nl < 400). Magnetic resonance imaging of the abdomen revealed a large 7.8 cm heterogeneous left adrenal mass. Patient was initiated on terazosin, subsequently labetalol was added. Two weeks later she had a successful left adrenalectomy and diagnosis was confirmed by histopathology and immunochemistry.
Discussion: The diagnosis and management of Pheochromocytoma is a great challenge. In our patient the use of methyldopa masked the diagnosis by its hypotensive effect and the full scope became evident only on its discontinuation. This case describes how the fortuitous use of methyldopa for presumed preeclampsia diminished the mortality risk in mother and fetus.

64. Rare Case of Concomitant C3 Glomerulopathy with Seropositive p-ANCA

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Background: C3 glomerulopathy is a rare kidney disease. It can range from an asymptomatic hematuria and proteinuria to rapid progressive glomerulonephritis. C3 glomerulopathy is extremely rare, with prevalence and incidence ranging from as low as 5 cases per 1,000,000 to 2-3 cases per 1,000,000 respectively in the U.S. Predominantly a condition caused by the dysregulation of the alternate complement pathway, C3 glomerulopathy is a diagnosis based on biopsy. Here, we present a case of a 65-year-old Hispanic Female who presented with hematuria and proteinuria, was found to be positive for C3 glomerulonephritis. However, she was also seropositive for p-ANCA without any signs or symptoms. There is scarce data or case reports regarding concomitant C3 glomerulonephritis with seropositive p-ANCA as C3glomerulopathy are usually seen in ANCA negative patients.
Case Description:C3 Glomerulopathy is a rare kidney disease. With very low incidence and prevalence rates. It usually occurs in ANCA negative patients. Here we have 65-year-old female who presents with hematuria and proteinuria as acute kidney injury. She was initially worked up as vasculitis and when observed was found to be p-ANCA positive without any signs and symptoms of vasculitis. She did not have any rash/palpable purpura, no epistaxis, schistocytes on peripheral blood smear. suspecting the patient to have pauci-immune vasculitis, kidney biopsy was done. Biopsy was positive for dominant C3 Glomerulonephritis.
Discussion: There are 1-2 case reports in the U.S regarding concomitant C3 Glomerulonephritis and seropositive p-ANCA. The fact that, this patient had seropositive p-ANCA with deposits of C3without any immunocomplex deposits.

65. Hypertension and Brachydactyly Syndrome.

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Background: Bilginturan syndrome or “Hypertension and Brachydactyly” syndrome is a rare autosomal dominant condition which results in severely uncontrolled hypertension which, if left untreated, presents an increased risk of stroke by age 50 and a high mortality.
Case Description: A 23-year-old African American male who presented for gastritis was incidentally found to have malignant hypertension (220/120) with resulting end-organ-damage consisting of left ventricular hypertrophy and focal segmental glomerulosclerosis. Physical examination was most significant for bilateral brachydactyly of the upper extremities. Family history was unknown, the patient was adopted as a child. X-Rays of the hands revealed bilaterally absent distal phalanges in 3rd-5th rays and fused middle and distal phalanx of 2nd finger. Bilateral feet X-Rays showed similar findings in addition to absence or

hypoplasia of the lateral cuneiform bones bilaterally. Common etiologies of secondary hypertension such as renal artery stenosis, hyperaldosteronism, and adrenal adenoma were ruled out. Hypertension was managed successfully using multiple antihypertensive medications.
Discussion: Hypertension in Bilginturan syndrome is salt independent, age dependent and monogenic for which mutant gene was mapped to short arm of chromosome 12. Mutations result in enhanced phosphorylation of phosphodiesterase (PDE) 3A resulting in accelerated vascular smooth muscle cell proliferation which causes peripheral vascular constriction. It results in increased peripheral vascular resistance ultimately causing hypertension. Additionally, this defective PDE3A results in dysregulated PTHRP (pseudohypoparathyroidism) and resultant phenotypes of brachydactyly and short stature. It is important to seek for brachydactyly while performing workup for secondary or malignant hypertension in adolescents or young adults and similarly seek for undiagnosed hypertension in patients with brachydactyly.

66. Atypical Hemolytic Uremic Syndrome

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Background: Atypical hemolytic uremic syndrome is a rare condition. Usually seen after an inciting event or a stress response. It has an extremely poor prognosis and high incidence of renal failure and dialysis dependence. Fortunately, there is a monoclonal antibody named eculizumab that works on the complement pathway and has shown tremendous benefit towards preventing mortality and morbidity.
Case Description: 25-Year-old pregnant female at 39 weeks of gestation presenting with grade +4 proteinuria, anemia, thrombocytopenia, hypertension and acute renal failure. Pt was induced and had a vaginal delivery suspecting HELLP syndrome. She continued to deteriorate with the renal function worsening. She was then transferred to the ICU during which she was initially started on plasmapheresis suspecting TTP. Renal function progressively worsened. That's when eculizumab was started suspecting atypical HUS. Renal function improved, so did the blood counts.
Discussion: Eculizumab is a monoclonal antibody that acts on the C5 complement. It has shown mortality and morbidity benefit in patients with atypical HUS. Early recognition and diagnosis of this rare condition is important. To doubt the diagnosis and reassess every day is of the utmost importance in Microangiopathic hemolytic anemia.

67. IVC Migration to the Right Ventricle

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Background: Inferior Vena Cava (IVC) filters are commonly placed when there is a contraindication to anticoagulation. Despite being safe, they can cause several dreaded complications. Thrombosis, IVC

perforation, and filter fracture are amongst the few complications that physicians are aware off. Intracardiac Migration of IVC filters is a rare complication. Intracardiac migration can be critical due to associated complications that may occur. Tricuspid valve is highly arrhythmogenic and can cause fatal arrhythmias. Retrieval of this device can be extremely difficult and may need surgical intervention.
Case Description:65-year Caucasian male with history of chronic lower extremity DVT on chronic anticoagulation on apixaban underwent an IVC filter placement as he was due for a right knee replacement. 1month Post knee replacement he was scheduled for the IVC filter removal. During the retrieval of the IVC filter, it was dislodged, and patient had an embolization of the IVC filter to the right ventricle. This required open heart surgery as the IVC filter was entangled in the chordae tendineae of the right ventricle.
Discussion: As the use of IVC filters has increased, we need to be aware of these sequelae. It is important to retrieve the devices when they migrate to the right side of the heart due to increased arrhythmogenicity, perforation or thrombosis. They certainly can be life threatening.

68. Seizure to Shock

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Background: Percutaneous coronary intervention has several complications depending on the access site. Femoral catheterizations can cause thrombosis, AV fistula, infection, thrombosis, distal embolization and retroperitoneal hemorrhage. Lateral abdominal wall hemorrhage is a rare presentation.
Case Description: 87-year-old female, with history of epilepsy presenting with ST elevation myocardial infarction (STEMI), cardiac catheterization revealed an embolus in the distal left anterior descending artery (LAD). Unfortunately, due to the tortuosity of LAD, PCI could not be performed. On arrival to the ICU on a heparin and an eptifibatide drip patient had 2 episodes of generalized tonic clonic seizures. Post-ictal, patients' blood pressure dropped drastically. There was a massive right sided abdominal mass on palpation. CT scan showed large high-density mass involving the right lateral abdominal muscular wall measuring 17.6cm x 13.7cm extending 22cm in a craniocaudal dimension causing hemorrhagic shock.
Discussion: Abdominal wall hematoma is a rare complication following percutaneous coronary intervention. Supportive treatment and control of hemorrhage is necessary in preventing mortality.

69. Unusual Bilateral Upper Extremity Pitting Edema in a Patient with Severe Dermatomyositis with Dysphagia

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Background: We report a rare clinical sign of bilateral upper extremity pitting edema in a patient with severe dermatomyositis in a 65-year-old Hispanic female.

Case Description: CC: 56-year-old Hispanic female 6 WKS progressive worsening bilateral upper extremity swelling, weakness and dysphagia. On exam vitals stable, bilateral upper extremities 3+ pitting edema, 3/5 strength in bilateral deltoids, 4/5 in biceps and triceps. Grip strength is 4/5 in both upper extremities. Left lower extremity was grossly swollen 2+pitting edema with strength in hip flexors 3/5 quadriceps and hamstrings were 4/5. Right hip flexor- 4/5 strength and 5/5 in quadriceps and hamstrings, reflexes preserved. Gottrons papules on bilateral knee area and poikilodermatous rash on both forearms, ears, bridge of the nose and upper back. Work up was negative for other causes of pitting edema. ANA and RNP were positive. MRI bilateral upper extremities and left lower extremity was consistent with myositis, Deep muscle biopsy of left thigh showed necrotizing myopathy. Myositis panel was positive forNXP2 antibodies. Patient responded with IV corticosteroids and IVIG therapy. Pitting edema improved. She was sent home on tapering oral prednisone along with azathioprine.
Discussion: Dermatomyositis is a rare inflammatory myopathy with wide clinical presentation varying from skin lesions like heliotrope rash, facial edema, gottron papules, shawl sign, proximal muscle weakness, dysphonia, dysphagia, pneumonitis, arthralgia, myalgia, cardiac involvement, calcinosis, subcutaneous edema and GI bleed. But presenting with pitting edema is rare. On our literature review, not many cases reported with upper extremity pitting edema and dermatomyositis.

70. An Atypical Presentation of Lemierre's Syndrome: Necrotizing Fasciitis Complicated by Septic Emboli and Empyema without Thrombophlebitis

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Background: Dr. Juan Sierra is originally from Medellin, Colombia. He trained at the University of Antioquia where he earned his medical degree. He is currently a PGY-1 resident at Texas Tech University Health Science Center at the Permian Basin Odessa, West Texas. Where he is training to become an internist. His interests include several areas of internal medicine including cardiology, critical care, and Infectious diseases. He loves teaching colleagues and students and be involved in academic discussions. In his free time, He enjoys playing soccer with friends, spending time with his family. He also likes seafood. His passions are traveling, drinking coffee from different places, meet new people and make friends from different cultural backgrounds.
Case Description: A 24-year-old male with a past medical history only significant for morbid obesity complained of subjective fevers, malaise, left elbow, ankle pain and swelling for one day. He denied neck pain, dysphagia or sore throat. There was no family history of primary immunodeficiencies. The patient denied any recent travel, sick contacts, or previous trauma. He also denied previous smoking history or illicit drug use. No previous history of recurrent infections. On physical examination, the patient was tachycardic. His oral cavity showed no edema or erythema. The left elbow and ankle had significant edema, along with crepitus. No hepatosplenomegaly. Initial laboratory studies: Leukocytosis 18 000, with neutrophilia 82%, bands 13%. A urinary drug screen was negative. HIV testing and hepatitis panel was negative. Immunoglobulins were elevated, primarily IgG, and albumin was decreased. C3 and C4 were normal. But CH50 was low at 52 (normal 60-144), Blood cultures grew Fusobacterium necrophorum. Left elbow and ankle x-ray showed gas in the subcutaneous tissue that raised concern for necrotizing fasciitis in the aforementioned areas leading the patient being taken to the OR requiring fasciotomy. Subsequent bilateral septic emboli to the lungs with bilateral pleural effusion was found on CT chest requiring bilateral thoracentesis. Left-sided empyema was also identified, and a chest tube was placed. TEE did not show any signs of endocarditis as a potential source of septic emboli.

Discussion: LS usually occurs in healthy young patients after a pharyngeal infection with subsequent IJT and possible septic emboli. It is associated with increased morbidity and mortality. In a cohort study from 1990-1995 in Denmark in 1998, only 7 patients of 49 were identified to have the skin as the primary source of infection. One case in 2007 in Italy and, one reported in the UK in 2012, arose from necrotizing fasciitis of the neck. One case in Africa in 2014 arose from Fournier gangrene in a previously healthy female and was the only described as a distant subcutaneous source for bacteremia. None of them had described the subcutaneous tissue distantly, as in the elbow and ankle, and that is why we think this is a unique case. Pleuropulmonary lesions are the most common metastatic site in Lemierre's syndrome accounting for up to 92% of the cases. This patient exhibited bilateral lung septic emboli with cavitary and non-cavitary lesions. This patient had several findings consistent with a severe inflammatory response evident by low CH50 probably due to immune complexes formed in septic emboli; increased immunoglobulins and secondary hypoalbuminemia. No actual signs of primary or secondary immunodeficiency were found.

71. Broken Heart Syndrome – a Case of Atypical Chest Pain in an Elderly Female

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Background: Takotsubo Cardiomyopathy also called "apical ballooning syndrome" or "broken heart syndrome" is a syndrome mimicking myocardial infarction in the absence of angiographic evidence of obstructive coronary artery. Here, we present the case of an elderly female who exhibited this syndrome and review the literature applicable to the risk factors, pathogenesis, diagnosis and treatment.
Case Description: A 78-year-old female with medical history significant for hypertension, diabetes with neuropathy, dyslipidemia, Osteoporosis, Parkinson's dementia, dysphagia s/p PEG tube, restless leg syndrome, history of DVT s/p IVC filter and osteoarthritis, presents to the emergency department for a sudden onset of substernal chest pressure and shortness of breath. Patient's vital signs and physical exam were normal. She was found to have elevated troponin and EKG showed slight ST-segment elevation in lateral leads. Cardiologist was consulted; patient underwent cardiac catheterization and coronary angiography. All coronary arteries were patent without any obstruction, no hypokinetic segments present, and ejection fraction was 60%. Echocardiogram showed left ventricular wall motion abnormality without any valvular abnormality and ejection fraction of 60%. Patient was diagnosed with Takotsubo cardiomyopathy. Patient's chest pain subsequently resolved and was discharged home. It was concluded that emotional stress was most likely the cause. Upon follow up with her cardiologist three months later, echocardiogram showed resolution of left ventricular wall motion abnormality and no change in ejection fraction.
Discussion: This case illustrates how this unique syndrome can clinically mimic more common but fatal coronary conditions that require rapid recognition, appropriate work-up, and extensive management; so early diagnosis of Takotsubo is vital in preventing excessive testing, procedures, and treatments.

72. Uterine Carcinosaroma in a Postmenopausal Patient: A Case Report and Literature Review

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Background: Uterine carcinosarcoma is a rare and invasive neoplasm that constitutes both an epithelial and a stromal component. Here, we present a case of post-menopausal female with vaginal bleeding who was diagnosed with Uterine Carcinosarcoma and review the literature applicable to the risk factors, pathogenesis, diagnosis and management of women with UCS.
Case Description: A 76-year-old female presented to clinic for vaginal bleeding. Ultrasound of the pelvis showed normal uterus, ovaries and endometrial thickness. An endometrial biopsy was done which showed benign endometrial polyp. Patient had total laparoscopic hysterectomy with bilateral salpingo-oophorectomy due to recurrent bleeding episodes. The pathology specimen showed endometrioid adenocarcinoma in situ with secretory cell changes developing within an endometrial polyp. Patient was referred to an oncologist who recommended no further treatment as she had stage 1Aendometrial cancer. Five months later, patient presented with left lower quadrant abdominal pain, constipation and hemorrhoids. On physical examination, there was a solid, rigid mass in the pelvis. CT scan revealed large pelvic mass which was possibly attached to the sigmoid colon extending from the vaginal cuff. General Surgery was consulted, and a laparotomy was performed which showed a large, firm mass originating from the sigmoid colon. Mass was resected and pathology report showed a high grade biphasic malignant neoplasm consistent with metastasis from uterine primary extending through the wall of the colon with mucosal ulceration consistent with Malignant Mullerian tumor (Uterine Carcinosarcoma).
Discussion: This case illustrates how aggressive Uterine carcinosarcoma can be. Though it is managed by surgery, adjuvant chemotherapy and radiotherapy, the recurrence rate is high with poor prognosis so early detection, recurrence prevention strategies and tumor marker directed therapy are important.

73. My Apple Watch Went Off!! A Rare Case of Aneurysmal Rupture of Sinus of Valsalva

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Background: A sinus of Valsalva aneurysm is a rare cardiac anomaly that may be congenital or acquired; a coexisting cardiac lesion might be present. If the aneurysm ruptures, it causes acute symptoms of dyspnea. Echocardiography and cardiac magnetic resonance imaging are useful for diagnosis with trans esophageal echocardiography being definitive mode of diagnosis. The treatment of choice is surgical repair.
Case Description: Patient is a 51-year-old female no significant past medical history other than being on Premarin (estrogen) status post hysterectomy. Patient presented to the emergency room stating that her Apple Watch went off showing heart rate in the 140s to 150s, experiencing epigastric chest pain radiating to the right upper quadrant and shortness of breath. She was noted to have low blood pressure with mean arterial blood pressure (MAP) ranging around 60mmHg. Based on her risk factors for having a DVT/PE, spiral CT was done which was negative and DVT ultrasound also did not reveal any clots in the legs. Upon trending, the troponins were found to be elevated. Cardiology was consulted who subjected her to Nuclear stress test which was negative for any cardiac ischemia. The transthoracic echo (TTE)revealed a small PFO with left-to-right shunt. Cardiac monitoring continued with adequate IV fluid hydration and further work-up to assess for presenting complaints. Sepsis work-up was negative but patient was started on empiric antibiotics based on low MAP and intermittent low-grade temperatures. Complaint of right upper quadrant pain continued and slowly worsened with associated peripheral edema. Right upper quadrant ultrasound ruled out gallstones but did reveal some pericholecystic fluid. Surgery was consulted. HIDA scan and an abdominal CAT scan, done subsequently, did not reveal any stones or abdominal infection. Patient's clinical picture continued to deteriorate with worsening shortness of breath, peripheral edema and right upper quadrant pain along with elevated liver and pancreatic enzymes.

Gastroenterology was consulted. Repeat CAT scan with contrast was done as a last-ditch effort to locate stones as a possible cause of acute pancreatitis but imaging did not reveal any stones. However, it did reveal worsening ascitic and pericholecystic fluid with inflammation around the head of the pancreas and significant pleural effusions. Patient underwent thoracentesis to relieve her shortness of breath. Lasix was initiated by Cardiology, but diuresis resulted in acute kidney injury. Nephrology was consulted who discontinued Lasix and maintained gentle hydration. All consultants and the primary care team were perplexed with the clinical presentation. The 3 main differential diagnosis at the time included occult malignancy with hepatic vein thrombosis i.e. MEIGS syndrome, autoimmune disorders and congestive hepatopathy. All cancer markers along with autoimmune panel were negative. A repeat TTE revealed worsening of the left to right shunt and a transesophageal echo (TEE)was then performed. The TEE revealed an aneurysmal rupture of sinus of Valsalva (found at the root of the aorta) with worsening of left to right shunt towards the IVC. This was most likely either traumatic or spontaneous rupture since there was no evidence of bacterial endocarditis on TEE. Patient was emergently transferred to a hospital with higher level of care, where she stayed for 2 weeks. She was evaluated for ruptured sinus of Valsalva, underwent surgical repair of aortic aneurysm with aortic root replacement. After the repair, patient returned to our care again and was managed for congestive hepatopathy which ultimately resolved with appropriate care. Patient continues to be on blood thinners after her aneurysmal repair to prevent clot formation and risk for embolic stroke.

Discussion:

Patent foramen ovale (PFO) occurs in 25 to 30 percent of the general population. The prevalence of PFO is higher in patients with cryptogenic stroke, particularly those under age 55 years in whom PFO is more likely to play a causal role. -Most individuals with PFO are asymptomatic, although some have clinical manifestations such as cryptogenic stroke, air embolism, or platypnea-orthodeoxia. A sinus of Valsalva aneurysm is a rare cardiac anomaly that may be congenital or acquired; a coexisting cardiac lesion might be present e.g. a PFO (as in this case). If the aneurysm ruptures, it causes acute symptoms of dyspnea.

Echocardiography and cardiac magnetic resonance imaging are useful for diagnosis with trans esophageal echocardiography being definitive mode of diagnosis. Transthoracic echocardiography (TTE) provides views of the proximal ascending aorta, aortic arch, and portions of the descending aorta. However, transesophageal echocardiography (TEE) is superior to TTE for comprehensive imaging of the aorta, especially in the emergency evaluation of aortic dissection or traumatic rupture of the aortic isthmus. The treatment of choice is surgical repair for the aneurysmal rupture with patient being on lifetime anti coagulation to prevent thrombus formation & stroke. PFO if large enough needs surgical or transcatheter repair as determined by a Cardiologist.

74. Rare case of Primary Hepatic Lymphoma

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Background: Non-Hodgkin Lymphoma is the 6th leading cause of new cancer cases among men and the 5th among women, accounting for 3% to 4% of cancer-related deaths in the United States. PHL is a lymphoma limited to the liver or having major liver involvement without evidence of extrahepatic involvement.

Case Description: 41-year-old male presenting as acute cholecystitis, hyperbilirubinemia, elevated transaminases, hepatosplenomegaly. Was initially treated for acute cholecystitis, but progressively deteriorated to develop disseminated intravascular coagulation, pancytopenia, acute renal failure. Liver

biopsy was performed as all the usual tests for elevated transaminases was negative. Liver biopsy was positive for Diffuse Large B-Cell Lymphoma, localized to the liver.
Discussion: PHL represents 0.016% of all non-Hodgkin's lymphomas and <1% of all extra-nodal lymphomas. Median survival was 13.5 years, and 5- and 10-year overall survival rates were 77and 59%. PHL is a rare disease and should be a part of the differential in a patient of any age presenting with unexplained progressive hepatitis, acute hepatic failure, liver mass or diffuse infiltration.

75. Euthyroid Graves' Ophthalmopathy with Negative Immuno-Reactive TSH

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Background: Graves' ophthalmopathy is one of the most discernible features of Graves' disease, an inflammatory autoimmune condition of the retroocular tissues. It is characterized by eyelid retraction, proptosis, lid lag, restrictive extraocular myopathy and optic neuropathy. In 10%patients, the disease presents independent of other symptoms of thyroid dysfunction otherwise known as Euthyroid Graves' ophthalmopathy (EGO). It is very rare to see a case of Graves' ophthalmopathy with absent autoantibodies. We report such a case.
Case Description: A 25-year-old female was referred to our department with an 8-month history of gradual bilateral vision loss and intermittent left-sided retroocular headache. At the time of admission ophthalmologic examination revealed bilateral proptosis, conjunctival redness and decreased visual acuity (VA). The patient displayed the following ocular signs: Dalrymple sign (lid retraction), von Graefe sign (retarded descent of upper lid at downward gaze) and Stellwag sign (infrequent blinking). Her Clinical Activity Score (CAS) was 3 -- conjunctival redness, retrobulbar pain and decreased VA. Fundoscopy showed optic atrophy. Due to classic ocular features of Graves, thyroid function tests including thyroid autoantibodies were done but results were all normal: free T4 of 1.10 ng/dL and TSH of 1.989 mIU/ml, thyroglobulin Ab < 0.9IU/ml, thyroid-stimulating immunoglobulin (TSI) 89 % and thyroid peroxidase antibody (TPO)1.5 IU/ml. MRI of the brain and orbits was performed to rule out other causes of proptosis and to determine the extent of ocular disease. This showed bilateral enlargement of the medial rectus muscles compressing both optic nerves. The right inferior rectus muscle was mildly enlarged with notable bilateral orbital fat stranding and extensive edema. MRI brain did not show mass, hydrocephalus or infarcts.
With these findings, a diagnosis of Euthyroid Graves' Ophthalmopathy was made. The patient was started on pulse dose IV steroids for 3 days. Her proptosis, swelling and visual acuity improved significantly over the next 3 days. When her condition had improved to an acceptable point for discharge, she was transitioned to oral steroids and sent home with a 4-week prescription and follow-up with endocrinology and ophthalmology.
Discussion: This case illustrates the potential for Graves' ophthalmopathy to occur while being seronegative for Thyroid autoantibodies. Its pathophysiology is still not fully understood but this case provides some insight into the significance of Thyroid autoantibodies and the role they play in disease manifestation. Diagnosing Graves' ophthalmopathy is a complex process requiring careful and meticulous review of signs, symptoms and imaging results, while excluding other causes of proptosis such as orbital mass/tumors. Relying alone on thyroid hormone and autoantibody levels is not always adequate for the diagnosis of Graves' disease.

76. 2,4 DNP - A Lethal Slimming Pill

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Background: 2,4-dinitrophenol (DNP) is an industrial chemical that has found illegal use recently as a weight-loss drug. It is extremely toxic in overdose with no antidote available and can often lead to death despite management based on current recommendations. We report a case of a young man with an intentional overdose of DNP. The course highlights the need for increased awareness among frontline medical staff, especially ER and ICU physicians, of the effects of DNP poisoning.
Case Description: A previously healthy 25-year-old obese (BMI 31) male was brought to the ER after he had ingested 4000 mg of DNP (16 pills of 250 mg each) intentionally. He initially complained of palpitations, diaphoresis, nausea, vomiting and shortness of breath. Initial examination revealed an anxious man with a temperature of 37.3 C, tachycardia of 140 and mildly increased respiratory rate of 26. Within a few minutes of arrival, the patient became extremely agitated, requiring administration of 8 mg of lorazepam in 2 doses and intubation shortly thereafter. Poison control was consulted with recommendations of aggressive fluid resuscitation, benzodiazepines for seizures and control of hyperpyrexia and rhabdomyolysis. The critical care team was consulted but the patient quickly deteriorated and went into cardiac arrest with asystole. ACLS was started and CPR was continued for 25 minutes, but ultimately unsuccessful. The patient was pronounced dead within 90 minutes of arrival to the ER.
Discussion: More than 60 deaths have been reported in the medical literature from 2,4-DNP overdose and most of these were in the 1930s when it was used as a diet pill in Europe and America. It has been banned since then but in recent years has come back on the internet black market, being sold as a weight loss pill under the brand name American Muscle. The increasing incidence, high mortality rate and lack of an effective antidote pose a challenge to frontline physicians. Management is limited to the administration of activated charcoal within 1 hour to reduce gastric absorption. Severe agitation and seizures can be treated with benzodiazepines. Fever and diaphoresis should be promptly treated with active cooling measures such as cooling blankets. IV acetaminophen and Dantrolene can be considered if first line cooling measures fail. There are no case reports of any patient surviving DNP-related cardiac arrest. Because of extremely high mortality, an intensive approach should be adopted early in symptomatic patients who present after taking a potentially fatal dose. These patients should be managed in an ICU setting with early intubation and mechanical ventilation. Physicians should be aware that deterioration can rapidly occur, leading to a fatal outcome.

77. Peritoneal Coccidioidomycosis, a Rare Case Report

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Background: Coccidioidomycosis is a fungal infection endemic to the southwestern United States and typically causes pulmonary illness. Extrapulmonary dissemination affects less than 1% and usually involves bones, meninges and skin. Gastrointestinal involvement is very rare. Here we report a case of disseminated coccidioidomycosis presenting as peritonitis in a young female.
Case Description: A 41-year-old Hispanic female presented with 3-month history of progressive abdominal distension, intermittent fever and anorexia. Past medical history included poorly controlled Diabetes

Mellitus type 2 and renal failure requiring hemodialysis. She had lived in West Texas for most of her life. Physical examination was notable for diffuse abdominal tenderness and ascites. Labs showed WBC count of 23,000 with normal liver function tests. CA 19-9 and CA125 were mildly elevated. Serum cocci IgM (2.7) and IgG (8.0) were positive along with positive antibodies by complement fixation (1:32) and immunodiffusion. Paracentesis revealed hazy yellow ascitic fluid. Ascitic fluid analysis showed 4670 wbcs with 4483 being neutrophils; albumin of 2.1g/dl and a serum ascitic albumin gradient of 1. Ascitic fluid gram stain, bacterial, fungal and mycobacterial cultures were negative. CT abdomen pelvis with IV contrast showed large volume ascites, hepatomegaly and diffuse omental caking and peritoneal thickening. CT scan of the thorax was remarkable for multiple pulmonary nodules bilaterally with mediastinal adenopathy. Laparoscopy was done which showed diffuse nodularity of the peritoneum concerning for peritoneal carcinomatosis. However, peritoneal biopsy showed Coccidioides spherules with necrotizing granulomatous inflammation and absence of malignancy. Patient was started on oral Fluconazole and had complete resolution of her fever and ascites. She was maintained on long term fluconazole therapy.

Discussion: This case illustrates how peritoneal coccidiomycosis is a rare but important form of disseminated infection. It can often be mistaken for peritoneal carcinomatosis. High index of clinical suspicion, and serologic testing for coccidiomycosis with peritoneal biopsy are critical for accurate diagnosis and initiation of appropriate treatment.

78. Bell's Palsy and Parkinsonian Features as a Sequela of West Nile Encephalitis.

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Case Description: West Nile virus (WNV), a single-stranded RNA flavivirus, is the leading cause of mosquito-borne disease in the United States. About 1 in 150 people who are infected develop neuroinvasive conditions such as meningitis, encephalitis or acute flaccid paralysis syndrome. Neuronal death in the central nervous system (CNS) is a hallmark of WNV-induced meningitis and encephalitis and can result in long-term neurological sequelae or even death. High dose steroids help shorten inflammatory state and possibly prevent development of post-infectious neurological sequelaes. 65-year-old Male with past medical history of Hypertension, Hyperlipidemia, Hypothyroidism presented to the ER complaining of malaise, nausea, vomiting, diarrhea, fever and "word-finding" difficulty for the past 2 days. He reported working outside in 100F weather for 5consecutive hours 3 days prior to presentation. On the physical exam, he had gait instability and parkinsonian features. Lumbar puncture findings were consistent with the diagnosis of viral encephalitis and further workup was negative. He was started on IV hydrocortisone and broad-spectrum IV antibiotics. He developed agitation that was unable to be managed with IV antipsychotics therefore, steroids were discontinued on ICU day 2. His mental status continued to improve during the hospital stay and CSF studies resulted positive for West Nile virus on ICU day 5. He participated with inpatient PT/OT/ST for his parkinsonian features, gait and speech. He was discharged home in stable condition with outpatient therapy and neurology referral. He was seen for follow-up in clinic 7 days after discharge and was clinically diagnosed with Left sided facial nerve palsy (Bell's Palsy). Supportive treatment with eyepatch and eye drops for lubrication were given. On subsequent follow-up visits, his facial palsy and parkinsonian features improved however did not resolve. His functionality remains affected.

Discussion: This case illustrates the neurological complications that can develop when inadequate steroid treatment for the West-Nile encephalitis is given. Methylprednisolone IV 1,000mg/day for 5days has shown to improve and even resolve neurological changes in patients with neuroinvasive WNV as compared to those treated with other IV steroid regimens. Prolonged inflammatory state in WNV encephalitis and inadequate dose of high dose steroids increases the chances of post-infectious neurological complications such as parkinsonism and facial nerve palsy.

79. A Case of Diagnostically Challenging Lung Tumor

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Background: Inflammatory myofibroblastic tumor (IMT) and pulmonary sarcomatoid carcinoma (PSC) account for <1% of primary lung neoplasms. We present a case of PSC that was initially diagnosed as IMT. While IMT is benign, PSC - malignant. Treatment for both types of tumors is surgical resection. Recurrence after surgery is rare for IMT, but PSC has a poor prognosis.
Case description: 56-year-old male with type 2 diabetes, hypertension, and 17 pack-year smoking history was found to have a left lung mass while being treated for ST-elevated myocardial infarction. He reported diminished appetite, 12 lbs. weight loss, cough with pink sputum for 4-5 months. Chest CT revealed 9x8 cm necrotic mass in the left upper lung lobe with invasion to the left superior pulmonary vein and extension into the left atrium. CT guided lung biopsy indicated IMT, so patient was referred for tumor resection. Surgical lung biopsy indicated PSC. Patient was treated with neoadjuvant chemotherapy with plan of debulking surgery. Two months later patient experienced complex partial seizures and brain MRI showed 1cm lesion in right anterolateral frontal lobe. Patient underwent mass resection and histology showed it as metastatic PSC. Patient is currently stable on levetiracetam for seizure control.
Discussion: PSC is poorly differentiated non-small cell lung cancer that contains sarcoma-like elements. IMT is a mesenchymal neoplasm that may occur in any organ. Correct diagnosis requires light microscopy and immunohistochemical staining. Inadequate biopsy specimen is the common cause of disease misdiagnosis and treatment delay.

80. Cotard Syndrome in Tumefactive Multiple Sclerosis - a Case Report

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Background: Sir, Cotard syndrome includes a constellation of nihilistic delusions such as being dead, putrefying or not existing; restricted to a specific body part or complete self. Generally associated with negative self-attribution due to psychotic depression; it has also been reported to occur in schizophrenia (Gardner- Thorpe and Pearn, 2004). Besides this, patients with Parkinson's disease, migraine, parietal cortex neoplasm, traumatic brain injury, encephalitis and multiple sclerosis have also been reported to have this syndrome (Ramirez-Bermudez et al., 2010). Multiple sclerosis (MS) is a chronic disease of the

nervous system caused by immune-mediated inflammation and demyelination and subsequent axonal damage resulting in loss of sensory and motor function (Karussis, 2014). Psychiatric problem in MS is very frequent with 50% lifetime risk of depression and most of these cases are over- looked (Feinstein, 2011). Tumefactive demyelinating lesions in MS is rare with one to two cases per 1000 patients, is more common in females and median age 37 years (Lucchinetti et al., 2008). It presents with intracranial lesion greater than 2 cm; mimicking malignant glioma or abscess and presents with headache, cognitive abnormality, mental confusion, aphasia, apraxia or seizure (Kaeser et al., 2011) Here we present a case of Cotard syndrome in a 39 years old woman with Tumefactive multiple sclerosis.

Case Description: Mrs. V 39 years old married Indian woman, presented with depressed mood, decreased sleep, decreased appetite, loss of interest in activities, poor self-care and painful weakness of left upper limb for 20 days. She was diagnosed with MS three years back; had multiple hospital admission for relapses and left medication each time she re- covered. There was no past history of any psychiatric or medical illness other than MS. The patient had a brother who was treated for depression.

On examination, she had increased tone and exaggerated deep tendon reflexes in bilateral upper and lower extremities. Plantar was bilaterally flexor, power in left upper limb was 2/5 and sensations were decreased. She was restless, anxious, mood was depressed, and nihilistic delusions were present. She kept on repeating "I am dead", "My body is rotten from the inside", "I am losing my organs while defecation". She refused to eat or drink and would say "Dead people don't eat". Magnetic resonance imaging (MRI) of brain showed lesions which were hypointense on T1and hyperintense on T2 and FLAIR sequences involving white matter of left frontal-occipital and right parietal regions, with mild perilesional edema, without any mass effect or midline shift (Fig. 1). MRI spine was normal. Neurology consult was sought and on the basis of history, examination, previous history of MS and imaging, diagnosis of Tumefactive MS with Cotard syndrome (DSM-5 diagnosis of major depressive disorder with the mood-congruent psychotic feature) was made. She was prescribed Injectable Methylprednisolone Pulse therapy (methylprednisolone 1g IV daily) for 3 days. Olanzapine 5mg and fluoxetine 20 mg were also added to her treatment. The patient showed dramatic improvement in her neurological symptoms. However, the improvement in her psychopathology was delayed. After one-week sleep, appetite and self-care improved and patient was put on interferon beta weekly. After three weeks there was complete resolution of mood and psychotic symptoms, olanzapine - fluoxetine were continued for eight weeks, then titrated and stopped. After that patient received weekly interferon beta and was followed up for six months period during which she was symptom-free.

Discussion: This is probably the first case report describing Cotard syndrome in tumefactive multiple sclerosis. While various neurological disorders have been described in association with Cotard syndrome, there is very limited literature on its association with multiple sclerosis. Gardner- Thorpe and Pearn (2004) described this syndrome in a 59-year-old woman with multiple sclerosis and attributed this to the focal pathology of temporo- parietal region postulating the presence of an organic centre for body image perception. Cotard and Capgrass syndrome have been linked to dysfunction resulting from disruption of visual limbic connection. Depression in Multiple sclerosis is reported to occur at significantly higher rates as compared to other chronic medical disorder (Moore, 2013). Diagnosing major depression in the patient with MS is further complicated by the overlap of symptoms such as fatigue, poor concentration, poor sleep, and appetite disturbances. Also, there is no evidence that the severity of neurologic MS symptoms correlates with the severity of depression. Our patient responded favorably to steroid pulse therapy and psychotropic medication and remained symptom-free in the six months follow up period illustrating that early recognition can have a potentially favorable outcome. Hence, patients with multiple sclerosis should be frequently screened for depression and treatment should be started at the earliest.

81. The 84-Year-Old State Boxing Champ: Bipolar Disorder, or Something Else?

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Background: Dopamine receptor agonists have been linked to the development of mania with psychotic features (Yuksel RN, et. al 2016; Perea E, et. al 2006). In a study by Stoner et al, 8 of 95 patients treated with ropinirole, 13 patients developed psychotic features that necessitated the use of antipsychotic medications or a lower dose of ropinirole. The risk of common adverse effects such as nausea, headache, fatigue, dizziness, and vomiting are increased both by higher doses of dopamine agonists and use in geriatric patients. When prescribing dopamine agonists, clinicians should educate patients and their caregivers about the rare but potential risk of medication-induced mania and psychosis.
Case Description: Mr. X, age 84, presents to the emergency department with agitation, mania-like symptoms, and mood-congruent psychotic symptoms that started 2 weeks ago. Mr. X, who is accompanied by his wife, has no psychiatric history. On examination, Mr. X is easily agitated and uncooperative. His speech is fast, but not pressured, with increased volume and tone. He states, "My mood is fantastic" with mood- congruent affect. His thought process reveals circumstantiality and loose association. Mr. X's thought content includes flight of ideas and delusions of grandeur; he claims to be a state boxing champion and a psychologist. He also claims that he will run for Congress in the near future. He reports that he's started knocking on his neighbors' doors, pitched the idea to buy their house, and convinced them to vote for him as their congressman. There is no evidence of perceptual disturbance. Mr. X undergoes a Mini-Mental State Examination (MMSE) and scores 26/30, which suggests no cognitive impairment. However, his insight and judgment are poor. His laboratory workup includes a complete blood count, comprehensive metabolic panel, urinalysis, thyroid function test, vitamin B12 and folate levels, urine drug screen, and blood alcohol level. All results are within normal limits. Non-contrast CT scan of his head shows no abnormality. Approximately 1 month ago, Mr. X was diagnosed with restless leg syndrome (RLS). Mr. X's medication regimen consists of gabapentin, 300 mg 3 times daily, prescribed years ago by his neurologist for neuropathic pain; and ropinirole, 3 mg/d, for RLS.
Discussion: When approaching new-onset mania and psychosis in geriatric patients, a comprehensive psychiatric evaluation and medical workup are necessary to rule out a wide differential diagnosis. Ropinirole use can lead to mania and psychotic symptoms, especially in geriatric patients. As should be done with all other dopaminergic agents, increase the dose of ropinirole with caution, and be vigilant for the emergence of signs of mania and/or psychosis.

82. Birt-Hogg-Dubé (BHD) Syndrome: A Rare Genetic Disorder Involving Spontaneous Pneumothoraces and Fibrofolliculomas

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Background: Birt-Hogg-Dubé Syndrome is an autosomal dominant disorder clinically manifested by fibrofolliculomas of the head and neck, benign or malignant renal tumors, lung cysts, and spontaneous pneumothoraces that has only been identified in 200 families worldwide. The culprit loss-of-function germline mutation involves the FLCN gene on chromosome 17p11.2 that codes for the protein folliculin.

Case Description: The case describes a 54-year-old white female with a past medical history of hypertension, diabetes mellitus type 2, and hyperlipidemia who presented to the emergency room (ER) complaining of chest "heaviness," shortness of breath, wheezing, and cough for two days. Imaging revealed the presence of a left-sided pneumothorax and subcutaneous emphysema. Chest tubes were placed, and the patient was taken to the operating room for video-assisted thoracoscopic surgery (VATS) for bullae and bleb resection as well as mechanical pleurodesis. Skin biopsy of papular lesions on both sides of her neck and cheek were positive for fibrofolliculoma. Paired with the presence of pneumothorax and family medical history of pneumothoraces, the diagnosis was confirmed. Pneumothorax resolution was confirmed on hospital day 11 and the patient was discharged home with follow-up instructions.
Discussion: Phenotypes in BHD syndrome are highly heterogeneous. Skin hamartomas are the earliest and most frequent manifestation. Pulmonary cysts can develop that may evolve into spontaneous pneumothoraxes. Startlingly enough, most affected patients have otherwise healthy lungs or mild obstructive lung disease at worst. Affected patients can also develop renal masses, the most life-threatening being clear cell renal carcinoma.

83. Charles Bonnet Syndrome: A Case Report and Review of the Literature

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Case Description: Charles Bonnet syndrome (CBS) is a rare medical disorder that is characterized by vivid, complex and recurrent visual hallucinations that occur in visually impaired patients in the absence of neurological or psychiatric diagnoses. It is a clinical diagnosis of exclusion and no standard treatment is presently available. In this case report, we present a 69-year-old white male nursing home resident presents with visual hallucinations of 5 months duration that occur during the daytime and both before and after sleep. No specific trigger was identified for the visual hallucinations. The patient describes the hallucinations as clear and vivid and states he has full insight and awareness of them. The hallucinations occurred once per month for the first 3 months but have increased in frequency to multiple times in a day within the last 2months. He described the most recent one (two days ago) in which he was involved in a fight with an unknown man who stabbed him in the chest and made him suffer a fall. He also reports daytime feelings of paranoia, midnight awakenings associated with feelings of anxiety, and an inability to resume sleep since the onset of the hallucinations. He denied all other types of hallucinations, delusions, suicidal or homicidal ideations as well as headache, trauma, and fever. He failed a trial of loxapine prescribed by his outpatient PCP and responded to a trial of olanzapine without any side effects.
Discussion: Even though CBS was described almost 250 years back and named by George de Morsier 81years back, relatively little is known about the syndrome. CBS is a diagnosis of exclusion made after ruling out metabolic, neurologic and psychiatric symptoms. There is no standard protocol for the treatment of CBS. To date, trials of anticonvulsant (carbamazepine, valproate, gabapentin), antipsychotics (haloperidol, risperidone, olanzapine), selective serotonin reuptake inhibitors (venlafaxine, citalopram), donepezil, and mirtazapine have been utilized for the treatment of visual hallucinations associated with CBS, albeit with limited results. To date, there have been 6 published cases of CBS treated with olanzapine. We prescribed olanzapine for the treatment of CBS and advised the patient to regularly monitor his weight, blood sugar and lipid levels. The patient showed a progressive clearance of visual hallucination in 12 days duration with olanzapine 5 mg daily. The patient also reported improvement in his sleep and decreased anxiety without any adjustment of his other medications. Thus, we found a good response with low dose olanzapine for the treatment of visual hallucinations associated with CBS.

84. Delayed Interval Delivery in Periviable Twin Pregnancy; A Case Report

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Background: Multifetal Gestation is a well-known risk factor for pre-term delivery. Increasing literature supports delayed interval delivery to improve fetal morbidity and mortality when the benefits outweigh the risks to the mother. The intent of this report is to add our experience to the limited literature regarding appropriate management in this obstetrical population.
Case Description: a 29yo G3P2002 with dichronic diamniotic pregnancy presented at 22w2d with preterm labor and cervical dilation greater than 4cm. Initial management included Maternal-Fetal Medicine and Neonatology consultation, antibiotics for multiple pelvic infections and tocolytics. At 22w4d, the patient had preterm prelabor rupture of membranes (PPROM) and vaginally delivered a female infant, ultimately with neonatal demise. Immediately after delivery of twin A, there were no gross signs of intrauterine infection. The decision was made to ligate twin A's umbilical cord near its placental insertion and leave this placental in-situ. Management continued with indomethacin and latency antibiotics. At 23w4d labor continued resulting in PPROM of twin B. Given a larger than anticipated estimated fetal weight, magnesium sulfate and betamethasone were administered to optimize the fetus for delivery. Ten days after admission, a primary classical c-section was performed with delivery of twin B, a viable male infant. Final pathology showed acute chorionitis.
Discussion: The case report is unique in that the fetuses were in a periviable period, whereas most literature focuses on cases at >24 weeks. We prolonged twin B's gestation and delivered a viable infant. While the best approach is still unclear, most cases involve expert consultation, informed consent, tocolytics, antibiotics, and steroids.

85. Clostridium Sordellii

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Background: Clostridium sordellii is a rare anaerobic, gram-positive, spore-forming rod with peritrichous flagella found in soil and sewage. *C. sordellii* infection is usually seen as a result of gynecological procedures, septic abortions and unhygienic deliveries.
Case Description: Here we present a 42-year-old male presenting with left shoulder pain swelling and redness, 2 days after he injected himself with intramuscular testosterone. CT of the upper extremity showed extensive inflammatory changes and presence of small pockets of air. Surgical debridement showed significant induration and bogginess of the left deltoid and proximal bicep region without purulent material. Patients' condition deteriorated within a matter of a few hours' as he developed acute tubular necrosis, transaminases, rhabdomyolysis, septic shock and went into fulminant toxic shock syndrome. Despite extending the antibiotic coverage and with multiple attempts at debridement, patient died. Cultures were positive for *C. sordellii* possibly inoculated after injecting himself with unsterile testosterone injections.

Discussion: *C. sordellii* produce extremely lethal and hemorrhagic toxins. They cause necrosis, edema and systemic vascular permeability. Myonecrosis and fulminant toxic shock syndrome caused by *C. sordellii* is rare and associated with extremely poor prognosis.