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Hospitalizations Among Medicaid and Medicaid-Ineligible Groups

Purpose for study: Undocumented individuals face substantial barriers to care including lack of understanding of the US health system and fear of deportation rates. The latter might lead to increased hospitalizations after the 2016 election. Our study analyzes hospitalization rates amongst a pool of undocumented patients and Medicaid controls across 8 adult and pediatric clinics in a mid-Atlantic health system between 2014-2018.

Methods: Using a difference-in-difference analysis, we attempted to determine whether there were any changes in the hospitalization rate between the 2016 general election and May 31, 2018, with January 1, 2014-November 8, 2016 serving as a reference period. Undocumented patients were identified by membership in charity and sliding scale programs sponsored by the health system that provide primary care access to a Medicaid-ineligible, predominantly (92%) undocumented population. To be included in analysis, patients must have had a single primary care visit January 1, 2014-October 31, 2015 covered by Medicaid or the charity/sliding program and not have died before the election. Obstetric-related hospitalizations and ED visits not resulting in hospitalizations were excluded. Estimates were calculated using a mixed effect model, controlling for age, baseline comorbidity, and gender.

Results: There are 17,504 patients in the sample (1,429 [8%] in the cohort group and 16,075 [92%] controls), 6,291 hospitalizations were analyzed. Pre-election hospitalization rates were not significantly different (0.289 admissions/person-year in Medicaid group, 0.268 admissions/person-year Medicaid-ineligible group, p=0.3), but fell to 0.208 admissions/person-year and 0.092 admissions/person-year after the election in the Medicaid and Medicaid-ineligible group, respectively, with a significant difference-in-difference (p<0.001). Over the 4 years analyzed, the greatest decline in hospitalizations was seen in the Medicaid-ineligible group from mid-2015 to mid-2016, but during the 3rd quarter of 2016 and the first 3 quarters of 2017, the hospitalization rate among Medicaid-ineligible patients rose to match that of controls.

Conclusion: There was a decline in hospitalizations in Medicaid and Medicaid-ineligible groups from 2015-2016, more dramatically among the Medicaid-ineligible patients, >90% of whom are undocumented. However immediately before and after the election, hospitalization rates among the Medicaid-ineligible cohort increased back to a comparable rate of the control group. Theories for the initial decline in hospitalizations among the Medicaid-ineligible group include improved primary care or increased ED discharges. More research is needed to determine whether peri-election increases amongst Medicaid-ineligible groups was associated with deferred primary care in the context of rising anti-immigrant rhetoric or seasonal variability.
Hypogammaglobulinemia in Patients with Frequent COPD Exacerbations

Background: COPD is the third leading cause of death, with acute exacerbations accounting for the majority of the cost, mortality, and morbidity. Hypogammaglobulinemia is associated with recurrent respiratory infections. We hypothesize that patients with frequent COPD exacerbations have an increased incidence of hypogammaglobulinemia.

Methods: Medical records at the Johns Hopkins Hospital were retrospectively searched (June 2016-June 2017) for all adults with frequent (2 or more) documented COPD exacerbations within any 12-month period. Hypogammaglobulinemia was defined as serum IgG below the lower limit of normal (<751 mg/dL). The incidence of hypogammaglobulinemia was compared in patients with frequent exacerbations, versus those with 1 or 0 yearly exacerbations.

Results: 161 patients were found to have 2 or more COPD exacerbations within a 1-year period. 56/161 had IgG levels on record. 22/56 (39.3%) had reduced IgG levels ranging from 336-737 mg/dL (mean 562, median 572); 4/56 had low IgA, and 16/56 low IgM. In comparison, out of 216 patients with COPD but with <2 yearly exacerbations, 36 had reported IgG levels. Only 3/36 (8.3%) had reduced IgG (540-603 mg/dL); none had reduced IgA, and 3/36 had reduced IgM. In the frequent exacerbation group, only 2 patients had likely reasons for hypogammaglobulinemia (prednisone >20mg/day).

Conclusions: This is the largest study of its kind illustrating the association between hypogammaglobulinemia and frequent COPD exacerbations. This data will serve as a cornerstone for future prospective studies evaluating antibody deficiency in COPD, and the potential role for immunomodulatory therapy in reducing COPD exacerbations.
A REVIEW OF MOOD DISORDERS DIAGNOSES OF UNINSURED SPANISH SPEAKING PATIENTS

Introduction: There is an increase in deportation and detention of undocumented immigrants since the 2016 presidential election in Baltimore, and increased deportation activity nationwide. This separation from families, or the fear of it, may have led to increased mood-related diagnoses in undocumented patients.

Methods: The study analyzes new mood disorder diagnoses in undocumented patients and Medicaid controls across 8 adult and pediatric clinics in a mid-Atlantic health system from 2014-2018. Using difference-in-difference analysis, our goal was to detect changes in the rate of new patients diagnosed with mood-related disorders (depression, adjustment disorder, anxiety, acute stress, suicidal ideation/attempt, PTSD, or maladaptive child behaviors) from November 9, 2016-May 31, 2018, with January 1, 2014-November 8, 2016 as a reference period. Undocumented patients were identified by membership in charity and sliding scale programs sponsored by the health system that provide primary care to a predominately (92%) undocumented population. Patients must have had a single primary care visit between January 1, 2014-October 31, 2015 covered by Medicaid or the charity/sliding program and still living before the election. Data was extracted from hospitalization and primary care records. Estimates were calculated using a mixed effect model, controlling for age and gender.

Results: There are 17,504 patients in the sample, 1,429 (8%) in the cohort group and 16,075 (92%) in the control group. 2,477 in both groups (14%) were given a mood disorder related diagnosis over the course of the study—855 depression (4.9%), 1,211 anxiety (6.9%), 163 with self-harm (0.93%), suicide attempt or suicidal ideation, and 133 with PTSD (0.76%). The rate of new diagnoses of all mood disorders did not differ after the election between Medicaid and Medicaid-ineligible groups (OR .919, p=.500). Examination of quarterly trends showed a progressive relative increase in the number of mood-related diagnoses, particularly depression, among Hispanic/Latino children compared to other children in both groups starting after the election, although the difference-in-difference was not significant (p=0.08).

Conclusion: While there was not a difference in the rate of new mood disorder diagnoses between Medicaid and Medicaid-ineligible patients, there appears to have been an increase in the rate of mood-related disorder diagnoses among Hispanic children compared to non-Hispanic children post-election. The finding is consistent with other studies which have shown increased depression, anxiety and psychosocial stress in children from the fear of deportation or detention of a family member.
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LA W ENFORCEMENT AND IMMIGRANT HEALTH
La Charite J, MD (ACP Member), Berger Z, MD (FACP), Bertram A, MS, Braverman D, BA, Goplerud D, BS, Norton A, BA 1. Hopkins

BACKGROUND- US immigration policies and enforcement can make immigrants fearful of accessing healthcare. Although current immigration policies restrict enforcement in “sensitive locations” including health care facilities, there are reports of enforcement actions in such settings. It is unclear if healthcare professionals know how to respond to immigration enforcement at their facilities.

PURPOSE FOR STUDY- To evaluate the experience of health professionals with workplace immigration enforcement, their knowledge and training regarding relevant policies, and their recommendations for their institutions to address law enforcement at their facilities.

METHODS- A cross-sectional survey of providers via the member portal of the Society for General Internal Medicine was conducted. They were encouraged to forward the survey to other healthcare professionals. Forty-two completed the survey. Descriptive statistics and Fisher’s exact tests were used for data analysis.

RESULTS- Most survey respondents were attending physicians (69%), worked at academic medical centers (91%), in outpatient settings (83%), and in the Northeast (40%). Many (83%) were not aware of workplace immigration-related law enforcement policies and few (5%) received training related to immigration law enforcement. Nearly 1 in 5 reported enforcement activities in or near their workplace, but no staff members involved had received training beforehand. Awareness of enforcement activity differed significantly by practice setting, with 57% of inpatient and 11% of outpatient providers reporting enforcement activity at or near their workplace (p <0.05). Survey responses about policy awareness or training did not vary significantly by region, job description, practice setting or patient language. Only 24% of respondents considered their facility prepared to respond to immigration enforcement. The most commonly cited reasons included lack of training (36%), lack of known policies (36%), and deference to immigration law enforcement (10%). Most respondents recommended staff training (70%) and/or policy development (57%).

CONCLUSIONS- Surveyed clinicians were largely unaware of workplace policies and few received training regarding responses to immigration enforcement. Most felt their facility would not be prepared to respond. Institutions should develop appropriate policies and procedures, educate and train staff, and engage with stakeholders to coordinate appropriate and ethical response to immigration enforcement in clinical settings.

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Indicate your participation in research process (4 sentences or less):
I performed a literature review, wrote the background and purpose for the abstract and manuscript, provided recommendations for what analyses to perform for the results, and reviewed and edited the abstract and manuscript draft.

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**Background:** Sitting at the bedside improves patients’ perception of their interactions with their physicians and improves patient satisfaction and outcomes. Despite these data, prior work shows that medicine interns sit during only 9% of observed physician-patient interactions. We aimed to design an educational curriculum to improve physician-patient communication and decrease resistance to sitting at the bedside.

**Methods:** A needs assessment among Internal Medicine residents at an urban academic medical center was conducted anonymously using an electronic survey. The survey was designed to assess knowledge gaps in residents’ perceptions and self-reported behaviors around sitting during inpatient encounters. Informed by survey results, an evidence-based educational campaign was designed to address the observed deficits in resident knowledge regarding time and communication in physician-patient encounters.

**Results:** The needs assessment yielded 96 responses of 151 residents surveyed (64% response rate). Residents who reported spending enough time at the bedside were also likely to report that their patients could identify them as their doctor ($r_s=0.28, p=0.006$). The majority of residents (63%), however, felt they rarely or never spent enough time at bedside. Although 69% of respondents felt that sitting during an admission history was important, only 30% reported doing this. Residents (26%) also felt that sitting would make the patient encounter longer, even though there was no difference in reported time completing an admission history between those who reported sitting and those who reported standing ($t=-1.38, p=0.17$). Therefore, an educational campaign entitled “S.I.T: Seeing I to Eye Together” was designed with the following teaching points: 1) Sitting increases patient perception of time spent at the bedside, 2) Sitting does not increase actual bedside time, and 3) Sitting enhances patient adherence and satisfaction, as well as physician communication. Education was disseminated through flyers and peer-led didactic presentations. Additionally, since 69% of residents felt sitting during attending-led rounds is important, attending physicians were asked to emphasize the teaching points during teaching rounds on inpatient Internal Medicine teams.

**Conclusion:** Survey results confirmed expected knowledge deficits, specifically as they pertained to time as a barrier to patient-physician communication. The learning objectives of the “S.I.T.” educational campaign may address a key deficit in Internal Medicine resident education related to optimizing physician-patient communication through sitting and, further, has larger implications for improving hospital performance on patient satisfaction.
A QUALITY IMPROVEMENT PROJECT TO INCREASE INITIATION OF BUPRENORPHINE MAINTENANCE FOR INPATIENTS WITH OPIOID USE DISORDER

Background: Patients with opioid use disorder (OUD) are inconsistently initiated and discharged on opioid agonist therapy such as buprenorphine on internal medicine services at Johns Hopkins Hospital (JHH). This is a missed opportunity to save lives in the midst of the opioid overdose epidemic. Additionally, it contributes to patients leaving against medical advice and raises the risk for readmissions.

Purpose: The primary aim of this quality improvement project is to increase the number of patients initiated on buprenorphine maintenance therapy (BMT). Secondary aims are to understand barriers to initiation of BMT, to decrease perceived barriers, and to increase the number of providers with Buprenorphine “X”-waivers.

Methods: We have conducted four interventions: 1) administered an 18-question survey to all IM residents regarding barriers to initiating BMT; 2) developed/disseminated a protocol for initiating BMT with follow-up; 3) presented a one-hour educational conference; and 4) started the JHH Buprenorphine Bridge Team of “X”-waivered physicians to prescribe bridging scripts of buprenorphine from discharge to follow-up. We will administer a follow-up survey in May after two additional educational conferences.

Results: 89 of 152 residents (59%) completed the baseline survey prior to implementation and identified the greatest barriers to initiating BMT as “don’t know how” (67%), “medical team chooses a taper” (49%), “no discharge plan” (47%), and “discomfort with dosing” (40%). Over the first 30 days since implementation, 11 patients were initiated on BMT, the Buprenorphine Bridge team was consulted 13 times, and 4 new attending physicians obtained their Buprenorphine “X”-waiver.

Conclusions: Inpatient admissions offer a crucial opportunity to start buprenorphine maintenance treatment for patients with OUD. Residents identified a lack of education and discharge planning as the most important barriers to initiating BMT. We addressed these barriers through resident education, a protocol for prescribing BMT, a novel Buprenorphine Bridge Team, and development of a system for follow-up in partnership with Care Coordination teams.
ADIPONECTIN, LEFT ATRIAL REMODELING, AND ATRIAL FIBRILLATION: THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS (MESA)
Kaveh Rezaei Bookani, MD; Mohammad R. Ostovaneh, MD; Bharath Ambale Venkatesh, MD; Shishir Sharma, MD; Matthew A. Allison, MD; Philip Greenland, MD; Susan R. Heckbert, MD; Colin O. Wu, MD; David A. Bluemke, DM; João A.C.Lima, MD
MedStar Harbor Hospital, Baltimore, Maryland

Introduction: Data on the association of adipokines and atrial fibrillation (AF) is not consistent in the literature. This study aimed at exploring the association of adiponectin with incident AF as well as left atrial (LA) structure and function in the Multi-Ethnic Study of Atherosclerosis (MESA).

Methods: MESA enrolled 8614 participants free of cardiovascular disease at baseline. Serum adipokines were measured in a subgroup of MESA subjects during MESA exams 2 or 3 and were included in this study. Of those, 904 participants underwent cardiac MRI at MESA exam 5, ten years after baseline. The association of log-transformed serum adiponectin level with incident AF events occurring after the MESA Exam 2 or 3 blood draw was tested using Cox Proportional Hazards regression analysis adjusted for demographics and traditional risk factors. Multivariable linear regression analysis was used to assess the association of serum adiponectin level with MRI-derived indices of LA function and structure at exam 5, including LA maximum volume, strain and emptying fractions.

Results: The mean age of participants (N=1,968) was 64.7±9.7 years, 49.6% were female, and 40.1% were Caucasian, 20.9% African-American, 26.0% Hispanic, 13.0% Chinese-American. Median serum adiponectin level was 17.4 µg/mL (IQR: 11.8-26.3). AF occurred in 224 participants during 17,959 person-years of follow-up. Higher adiponectin level was associated with AF (HR: 1.6±0.2 for each unit increase in log adiponectin, CI95%: 1.3-2.0). This association was greater after adjusting for demographics and traditional risk factors (HR: 1.9±0.3, CI95%: 1.5, 2.6). Higher adiponectin level was also associated with greater LA maximum volume index (β: 1.8 ml/m², CI95%: 0.2, 3.4), lower LA active (β: -2.6 %, CI95%: -4.3, -0.9) and total emptying fraction (β: -2.1 %, CI95%: -3.6, -0.5) but was not associated with LA passive emptying fraction (β: 0.1 %, CI95%: -1.0, 1.1) or LA maximum strain (β: -1.3 s⁻¹, CI95%: -3.2, 0.6).

Conclusion: Higher serum adiponectin was associated with an increased risk of AF events. Higher adiponectin was also associated with LA dilatation and worse LA function.

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I am fully responsible for the research study. I developed the research idea, conducted the research with medical students rotating in our department, analyzed the data, and will be submitting the study to a top peer-review journal.

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OPHTHALMIC PATIENT SATISFACTION AND PHYSICIANS’ TWITTER AND INSTAGRAM PRESENCE

Jason L. Chien, MD1; Ling Jie Wang, BS1; Roshanak Salehi, BS1; Esin C. Namoglu, BS2; Pei-Lun Kuo, MD3; Kai-Hua Chang, MD4
1Department of Medicine, Medstar Harbor Hospital, Baltimore, MD; 2College of Liberal and Professional Studies, University of Pennsylvania, Philadelphia, PA; 3Department of Epidemiology, Johns Hopkins Bloomberg School of Public Health, Baltimore, MD; 4Department of Surgery, Johns Hopkins University School of Medicine, Baltimore, MD

Purpose of the Study: To evaluate the influence of American Society of Ophthalmic Plastic & Reconstructive Surgery (ASORPS) surgeons’ social media presence on patient satisfaction scores using leading physician review websites.

Methods: 647 ASORPS surgeons in the United States were included in this study. Surgeons practice location and age and review data were collected from 3 physician rating websites: Healthgrades, Vitals, and Google Business Rating from 8/11-18-9/30/18. Using only the first 10 search results from Google.com, we identified the presence of Twitter (TW) and/or Instagram (IG) of the ASORPS surgeons. Outcome measures from physician review websites (overall ratings, numbers of ratings, numbers of comments, and patient-reported wait times) and physician social media presence were collected. Chi-square tests were performed for categorical variables and Mann-Whitney tests for non-normal variables. Bivariate linear regression analysis was used for association between Healthgrades rating and wait times.

Results: Among the 647 ASORPS surgeons identified, the presence of TW and IG were 10.79% and 9.09%, respectively. Greater TW presence of surgeons practicing in the Northeast (15.4%) was found compared to other regions of practice (West, Midwest, and South; 15.3%, 4.1%, 8.3%, respectively)(P<0.01). Greater IG presence of surgeons age less than 40 years old (24.6%) was found compared to other age groups (40-50 years old and ≥60 years old; 10.6%, 3.0%, respectively)(P<0.01). Surgeons using IG had a significantly higher overall rating on Vitals (P<0.01), but Healthgrades and Google Business Rating were unaffected by IG presence (both P>0.18). TW or IG presence was significantly associated with an increased number of ratings and comments (P<0.01). There was a significant inverse correlation between patient-reported wait times and overall rating scores on Healthgrades (P<0.05).

Discussion: Review of ASORPS surgeons’ social media presence revealed regional and age demographic differences. The presence of TW and IG is associated with a greater number of online ratings and comments, and IG presence is significantly associated with overall patient satisfaction ratings on Vitals. Notably, patient-reported wait times had a significant association on overall satisfaction ratings. To improve overall patient satisfaction, physicians should minimize wait times and consider social media as a new approach to engaging with their patients.

Program Director’s Name:
Dr. Stephanie A. Deterline, MD
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ABSTRACT FORM: Must be at least 10-point font. A sharp typeface will help reproduction. Be sure to single-space and STAY WITHIN THE BORDERS
FACTORS ASSOCIATED WITH SUCCESSFUL OPIOID ANALGESIC WEANING IN PATIENTS WITH CHRONIC ABDOMINAL PAIN: RESULTS FROM A MULTIDISCIPLINARY CHRONIC ABDOMINAL PAIN (CAP) MANAGEMENT PROGRAM

Farshid Fargahi, MD; Niloofar Jalaly, MD; Robert Moran, MD; Rehan Farooqi, MD; Vikesh Singh, MD; Maneesh Sharma, MD
MedStar Health Internal Medicine, Baltimore, MD

Introduction: Despite national guidelines advocating against opioid use for chronic non-cancer pain syndromes, opioids are commonly used to treat CAP. Our aim is to develop strategies for successful opioid weaning while also controlling pain.

Methods: We performed a retrospective study of patients with CAP managed in a multidisciplinary CAP management program from 2012-2017. Our program utilizes non-opioid analgesics, physical therapies, life-style modification, and interventional pain procedures to improve pain treatment allowing us to wean opioids. The total dose of daily opioids was converted to oral morphine equivalents (OME). Pain was assessed at each clinic visit using the visual analogue scale (VAS).

Results: A total 65 patients with CAP were enrolled. Patients were categorized in two groups: those with significant > 50% reduction in OME (group 1) and those with either no change, an increase, or < 50% reduction in OME (group 2). The mean decrease in OME between the index and last visit was 105 mg and 10 mg in group 1 and 2, respectively (p < 0.001 for both groups). The mean VAS at index visit was 6.1 in group 1 and 7.2 for group 2 (p=0.02). The mean decrease in VAS between index and last visit was 1.2 and 1.7 for group 1 and 2, respectively (p=0.02 for group 1 and p=0.001 in group 2). Patients in group 2, were more likely to have chronic pancreatitis than patients in group 1 (11/33 vs. 5/32, p = 0.05). On multivariable logistic regression, chronic pancreatitis (OR=0.88, 95% CI= 0.5 - 0.93, p =0.01) and a higher pain score at index visit (OR=0.27, 95%CI=0.4-0.93, p =0.04) were significantly associated with failure of achieving >50% OME dose reduction.

Conclusion: Our study showed opioid weaning was more successful in patients with lower pain scores at index visit, and those with etiologies other than chronic pancreatitis. This indicates the necessity of the start of non-opioid therapy early in the course of the disease for better results. Also, pharmacologic non-opioid therapies are critical for achieving successful opioid weaning, and patients compliant with multidisciplinary therapies had better outcomes.
**RESEARCH POSTER 10**

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**Background:** Receptor for advanced glycation end-products (RAGE) is a mediator of inflammation associated end-organ dysfunction such as obstructive airways disease. RAGE is a member of the immunoglobulin superfamily and has several isoforms which recognize pathogens and endogenous ligands. RAGE is at the highest baseline level in the lungs, where it is expressed by alveolar type epithelial cells, alveolar macrophages, and smooth muscle cells of the airways. The membrane bound form is a key mediator of inflammation, metabolic dysfunction, and vascular injury. Our group has identified RAGE as a predictor of World Trade Center particulate matter associated lung injury. The aim of this systematic review is to assess the relationship between RAGE and obstructive airways disease (OAD) secondary to environmental exposure.

**Methods:** A comprehensive search using PubMed and EMBASE was performed on 1/05/2018 utilizing keywords focusing on environmental exposure, obstructive airways disease, RAGE and was registered with PROSPERO (2018-CRD42018093834). We included original human research studies in English, focusing on pulmonary end-points associated with RAGE and environmental exposure.

**Results:** A total of 213 studies were identified on the initial search. After removing the duplicates, applying inclusion/exclusions, we screened the titles and abstracts of 61 studies. Finally, 19 full text articles were included. The exposures discussed in these articles include particulate matter (n=2) and cigarette smoke (n=17). Of these, six investigations discuss RAGE as a biomarker of OAD activity, seven evaluate the association of RAGE with OAD, four are GWAS studies discussing RAGE and its isoforms in COPD and smoking, and two discuss the role of RAGE in multiple end-organ outcomes.

**Discussion:** RAGE is involved in the inflammatory cascade of events that lead to development of OAD. Soluble RAGE acts as a decoy receptor and may have a protective effect against development of OAD and patients with lower levels of soluble RAGE may have more severe COPD and emphysema. By targeting RAGE mediated inflammation, we may mitigate progression of obstructive airways disease.

**Program Director's Name:** Stephanie Detterline

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**ABSTRACT FORM:** Must be at least 10-point font. A sharp typeface will help reproduction. Be sure to single-space and **STAY WITHIN THE BORDERS!**
N-ACETYL CYSTEINE IN DYSPEPSIA TREATMENT

Mehdi Hemmati, MD¹; Afshin Habibzadeh, MD²
¹. Medstar Health Internal Medicine, Baltimore, Maryland
². Department of Internal Medicine, Ardabil University of Medical Sciences, Ardabil, Iran

Purpose: In this study, we evaluated the efficacy of N-acetyl cysteine (NAC) in improvement of the dyspepsia symptoms in H. pylori negative dyspeptic patients.

Methods: In this randomized clinical trial, 85 patients with functional dyspepsia without H. pylori infection underwent treatment with a proton pump inhibitor (PPI) (pantoprazole 40 mg) daily with (n=41) or without (n=44) NAC 600 mg twice a day for eight weeks. Patients' clinical symptoms and change in the severity of dyspepsia symptoms were compared between the groups.

Results: Common symptoms were epigastric pain and bloating. The intervention group had significantly more cases with retrosternal burn and bloating and less early satiety as compared to the control group. In both intervention and control groups, dyspepsia severity was significantly reduced from 5.26±2.06 and 4.66±2.81 to 1.87±1.38 and 2.22±2.04, respectively (p<0.001). The percent of reduction in dyspepsia severity in the intervention group was significantly higher than the control group (-66.25±23.44% vs. -50.14±35.02%, p=0.01).

Conclusion: PPIs are an effective treatment in functional dyspepsia and our study suggests that NAC as an adjuvant can increase the response rate and treatment efficacy in dyspeptic patients.

Program Director's Name: Stephanie Detterline, MD

(Indicating review of abstract)
Patient and Provider Perspectives on Deprescribing Proton Pump Inhibitors (PPIs)
Chisom Ikeji, MD; Nicole Brandt, PharmD; George Hennawi, MD; Anne Williams, PharmD
MedStar Health Internal Medicine, Baltimore, Maryland
Medstar Good Samaritan Hospital, Baltimore, Maryland

Background: In the US, approximately 27% of Medicare beneficiaries and 79% of skilled nursing facility residents use PPIs. Although short-term therapy is safe and effective, long-term use has been associated with potential adverse effects. Deprescribing is a structured approach to optimize medications. The aim of this study is to describe the PPI prescribing trends in a geriatric patient population and elucidate patient, caregiver, and provider perspectives regarding PPI deprescribing.

Methods: We performed a retrospective chart review of patients 65 years and older at the Center for Successful Aging, Baltimore, MD to identify those on PPI therapy. Charts were reviewed for indication, length of use, dose, and type of PPI therapy. Patients on PPI therapy at the Center for Successful Aging were asked to complete a 14 question deprescribing survey following their office visit. Survey questions were developed and modified from the validated Revised Patients’ Attitudes Toward Deprescribing (rPATD). Providers at MedStar Health hospitals were emailed an online survey of 10 questions, which was modified from an existing measure of practitioner deprescribing perspectives.

Results: Chart review identified 107 patients taking a PPI. 74% of the patients had GERD or heartburn, and 84% had been taking a PPI for greater than one year. Sixty-six (66%) of the patients were determined to be inappropriately prescribed PPIs due to dose, duration, and/or indication. Surveys were completed by 19 patients to assess the perceived appropriateness of medication use (harms and benefits), concerns about stopping the medication, and level of involvement/knowledge of medications. A total of 74 providers completed the survey. Barriers to deprescribing included uncertainty about medication indication, fear of consequences, access to documentations, and lack of knowledge of current guidelines.

Conclusion: Our study identified prevalent long-term use of PPIs among patients without a documented long-term clinical indication. It also identified perceived barriers among patients and providers impacting deprescribing. Long-term PPI use is associated with significant side effects, successful deprescribing must address these perceived barriers.
ECONOMIC BURDEN OF 30-DAY READMISSION RATE IN ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)  
Uvesh Mansuri, MD¹; Achint Patel, MD²; Rehan Farooqi, MD¹;  
Ritesh Shrestha, MBBS¹;  
¹Medstar Health Internal Medicine Residency Program, Baltimore MD  
²Icahn School of Medicine at Mount Sinai, New York, NY.

Background: ARDS is one of the important causes of morbidity and mortality in the US. The causes and economic impact of 30-day readmissions along with national estimates of 30-day readmissions in ARDS patients in the US are unknown.

Objective: To identify 30-day readmission rates, predictors, causes, and economic impact of ARDS using the largest publicly available nationwide database.

Methods: We used the National Readmission Dataset (NRD) from the year 2013 to extract patients with ARDS using primary discharge diagnosis with previously validated ICD9-CM code of 518.82. All cause unplanned 30-day readmission rates were calculated for patients admitted between January and November 2013 by excluding elective readmissions. We used chi-square tests, t tests, and Wilcoxon rank-sum tests for descriptive analyses and survey logistic regression to calculate adjusted odds ratios (aORs) and 95% confidence intervals (CIs) for independent predictors for unplanned 30-day readmissions adjusting for confounders. We used SAS 9.4 for statistical purposes.

Results: Out of a total 53,555 index admissions for ARDS in the United States during in 2013, 18% (9,804 patients) had an unplanned readmission within 30 days. Among the top causes of unplanned readmission were congestive heart failure (9.4%), septicemia (8.2%), pneumonia (7.1%), respiratory failure (4.6%), and aspiration pneumonitis (3.3%). In multivariate regression analysis, increasing age, higher co-morbidity score, self/no insurance, and lower socioeconomic status, had higher odds of readmission. It is also noted that shorter lengths of stay (LOS) had higher odds of readmission. The estimated total cost of unplanned 30-day readmissions in ARDS patients was $150 million for 2013.

Conclusion: The unplanned 30-day readmission rate and associated healthcare costs are high for ARDS patients in the US. Further studies are warranted for better risk stratification to reduce preventable readmissions and cost burden.
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General Classification:
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( x ) Research Competition
( ) Basic Science
( ) Evidence based medicine review
( x ) Quality/Safety
( ) Clinical Research

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ARTIFICIAL INTELLIGENCE FOR ICU SEPSIS
Annie Y. Song, MD
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Purpose: As Artificial Intelligence (AI) is being introduced in various healthcare settings including the adult ICU, it is important for practitioners to review and understand the new AI scoring systems for ICU sepsis.

Methods: By searching PubMed for publications describing sepsis scoring systems in the ICU associated with key words "Artificial Intelligence" or "Machine Learning," all results were included in this review. Years 2015 through 2019 were used.

Results: There are four new scoring systems developed by AI modeling in recent years, three of which are for predicting sepsis, and one for predicting septic shock in the ICU. AISE uses 65 physiological values in its modeling for sepsis onset, compared to 8 for InSight and 2 for Entropy. Their prediction performances, demonstrated by area under the curve (AUC), are 0.83-0.85, 0.74-0.88, and 0.67, respectively. For septic shock prediction, TRESW Score uses 54 factors as modeling input, with AUC of 0.82.

Conclusions: General-purpose illness severity scoring systems such as Sequential Organ Failure Assessment (SOFA), the Acute Physiology and Chronic Health Evaluation (APACHE II), Simplified Acute Physiology Score (SAPS II), Modified Early Warning Score (MEWS), and Simple Clinical Score (SCS) are validated to assess illness severity and mortality, but they cannot distinguish which patients are at highest risk of developing sepsis and associated organ dysfunction. AI scoring systems have been developed to specifically target sepsis in the ICU setting, to help detect at risk patients early with high accuracy. Each scoring system has its superiority and shortcoming. Further studies are needed to incorporate better clinical and computational abilities to develop trustworthy AI tools to be used in future patient care.

ABSTRACT FORM: Must be at least 10-point font. A sharp typeface will help reproduction. Be sure to single-space and STAY WITHIN THE BORDERS!
AVASCULAR NECROSIS IN THE HOPKINS MYOSITIS COHORT: A SINGLE CENTER EXPERIENCE.
Khalil I. Bourji MD¹, Lisa Christopher-Stine, MD².
¹Sinai Hospital, Baltimore, Maryland
²Johns Hopkins Hospital, Baltimore, Maryland

Objectives. To assess the prevalence of avascular necrosis (AVN) in a large cohort of patients with idiopathic inflammatory myopathies (IIM) and define the major associated risk factors.

Methods. We retrospectively reviewed the electronic medical records of all patients with a definitive diagnosis of IIM in our cohort, querying for keywords ("avascular necrosis", "AVN", "osteonecrosis"). Pertinent demographic, clinical (including major risk factors for AVN), serologic and imaging data were collected. A matched group of patients without AVN was then selected for comparison (matched for sex, age at IIM diagnosis ± 2 years, and duration of IIM ± 1 year).

Results. 53 patients developed AVN with a prevalence of 3.1%. The majority of patients were Caucasian females (57%) with a mean age at diagnosis of 44.5±12.4 years. 59% had Dermatomyositis and 28% had Polymyositis. The median time from diagnosis of IIM to diagnosis of AVN was 46 months. Only 18% were symptomatic. Hip joint was involved in 77%, Knee joint in 16% and Shoulder joint in 7%. A history of alcohol use was the only risk factor that was statistically associated with AVN (36% vs 13%; OR=3.98, CI [1.31-12.0], p=0.01). Corticosteroid use was not associated with an increased risk of AVN.

Conclusions. Although mostly asymptomatic, the prevalence of AVN in IIM was 3.1% and alcohol use was the only risk factor for AVN development.
OVERLAPPING CONTIGUOUS ELECTROCARDIOGRAM LEADS AS A NOVEL CRITERION FOR THE DIAGNOSIS OF LEFT VENTRICULAR HYPERTROPHY. Evans, MC, MD, Craft, C, MD, Benitez RM, MD. The University of Maryland Medical Center and Baltimore VA Medical Center, Baltimore, MD.

Background: Over three dozen electrocardiographic (EKG) criteria for left ventricular hypertrophy (LVH) have been endorsed by the American College of Cardiology and American Heart Association. Despite their widespread adoption into clinical practice, the sensitivity for the detection of LVH for the most commonly used EKG criteria remains surprisingly low. This creates an unnecessary degree of confusion for providers across all specialties. We aimed to determine the sensitivity and specificity of the presence of overlapping contiguous EKG leads for the diagnosis of LVH.

Methods: Data was collected retrospectively from 143 patients admitted to one of two inpatient cardiology services at the University of Maryland Medical Center during a three-month period. EKGs were considered positive for overlap if there was any QRS contact between two contiguous leads on a standard 12-lead EKG. Transthoracic echocardiograms were used as the gold standard for the diagnosis of LVH; left ventricular mass index was calculated using the Devereux formula.

Results: Patients were predominantly male (56%) and African American (53%) with an average age of 60 ± 15 years. The overall incidence of LVH within this cohort was 36%. There was a statistically significant difference in calculated sensitivity between the proposed overlap criteria (72.6%, 95% CI 58.3-84.1%) and the Cornell criteria (43.1%, 95% confidence interval [CI] 29.3-57.8%), Sokolow-Lyon index (23.5%, 95% CI 12.8-37.5%) and Romhilt-Estes criteria (31.4%, 95% CI 19.1-45.9%), (p < 0.05). No statistically significant difference was observed between the specificity of each criteria.

Discussion: The presence of overlapping contiguous EKG leads confirms an improved diagnostic sensitivity for the detection of LVH compared to the Cornell voltage criteria, the Sokolow-Lyon index and Romhilt-Estes criteria without significantly decreasing the diagnostic specificity. This helps to validate a simple, novel diagnostic criterion for the rapid detection of LVH. The incidence of LVH within the sample studied was comparable to the estimated incidence in the general population.
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FEATURES AND CHARACTERISTICS OF GASTROINTESTINAL BLEEDING IN PATIENTS RECEIVING EXTRACORPOREAL MEMBRANE OXYGENATION. Ma AS, MD, Morris JD, MD, Rubin JN, MD, Herr DL, MD, Mazzeffi, MA, MD. The University of Maryland Medical Center and Baltimore VA Medical Center, Baltimore, MD.

Background: Extracorporeal membrane oxygenation (ECMO) is a form of prolonged cardiopulmonary support for cardiac and respiratory failure. The nature of the circuitry causes an acquired coagulopathy requiring use of continuous anticoagulation. Gastrointestinal (GI) bleeding is a common complication. Our aims are to investigate the incidence of GI bleeding in ECMO patients, identify risk factors for GI bleeding, and characterize the nature of such bleeds.

Methods: We performed a retrospective review of 269 patients who received ECMO from March 2010 to February 2015, identifying patients with overt GI bleeding. We reviewed consultations for endoscopic intervention and subsequent clinical courses. Using Stata IC 15, a Cox proportional hazards analysis was performed to identify factors associated with GI bleeding.

Results: After analysis of 32 clinical variables, our univariate proportional hazards regression identified that post-cardiotomy shock (2.39, p=0.01) and age (1.03, p=0.002) exhibited significant hazard ratios. Other variables of increased but undetermined significance were hypertension, indication for ECMO, type of cannulation, and number of plasma transfusions. GI bleeding was associated with significant in-hospital mortality (3.30, p=0.001). Of the 269 patients, 41 (15%) exhibited overt GI bleeding while receiving ECMO, most commonly as hematochezia (41%) and melena (37%). 19 underwent endoscopies. 79% of all bleeds were upper GI bleeds, with the most common source being gastroduodenitis without ulceration (47%) and esophagitis (42%). The most common source of lower GI bleeding was ischemic colitis (16%). 4 endoscopies demonstrated lesions amenable to endoscopic or angiographic intervention, of which all were successful.

Discussion: Overt GI bleeding is a common complication after initiation of ECMO. It is a strong predictor of in-hospital mortality, with the greatest risk factors for bleeding being age and post-cardiotomy shock. When clinically appropriate, all endoscopies were able to identify a source of bleeding. Hematochezia was the most common presentation, but the majority of bleeding sources lay within the upper GI tract with the most common being gastroduodenitis. Limitations of this study include the retrospective design, but it remains the most extensive investigation of GI bleeding in ECMO patients to date.
Reeves R, MD, Wu Y, PhD, Hefter G, BS, Barfield W, PhD, Pellegrini V, MD. University of Maryland, Baltimore MD; Clemson University, Charleston SC; Medical Univ. of South Carolina, Charleston SC.

Background: Fractures that fail to heal (nonunions) occur due to impairment of either intramembranous or endochondral ossification. Smokers develop nonunions more frequently; however, the mechanisms by which this occurs are unknown. Studying the effects of cigarette smoke in vivo is challenging and many use administration of nicotine as a surrogate, excluding many of the compounds in cigarette smoke. We sought to establish a reproducible smoke-exposure protocol for the in vivo study of fracture healing biology in the Sprague-Dawley rat.

Methods: Forty-six male rats were randomized to control or smoke-exposures. All animals underwent iatrogenic bilateral femur fracture with one side fixed via an intramedullary nail (endochondral healing) and the contralateral side fixed by compression plating (intramembranous healing). Half of the animals were subjected to daily one-hour cigarette smoke exposures for both one month pre and postoperatively. Exposures were assessed with measurement of the smoke concentrations via their total particulate matter (TPM).

Results: Exposed animals experienced an average TPM of 200.6 ± 73.0 mg/m3 (95% CI: 193.9 -207.3, ANOVA, p = 0.061) and serum cotinine levels were 368 ± 82ng/nL. Animals exhibited radiographic evidence of fracture healing without clinically apparent impairment in gait. Animals exhibited loss of bodyweight after 10 days of cigarette smoke exposure (mean difference: 50.1, 95% CI: 19.4, 80.8, p = 0.002) and this difference persisted following smoking cessation (mean difference: 50.2, 95% CI: 26.3,74.2; p <0.01). The decrement in body weight was accompanied by a decrease in food consumption in the exposed animals (mean difference: -6.56, 95% CI: -9.54, -3.59; p < 0.001).

Discussion: This study represents the successful establishment of a smoke-exposure protocol in a bilateral femur fracture model. Exposures resulted in a clinically-relevant cotinine levels like those seen in one pack-per-day smokers. Smoke induced anorexia and subsequent weight loss. Cigarette smoke remains one of the most vexing risk factors for development of a non-union. By incorporating concurrent study of intramembranous and endochondral ossification pathways in the same animal, this model for tobacco smoke-exposure may facilitate determination of which treatment approach best supports fracture healing in the setting of cigarette-smoking patients.

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Abstract Form: Must be at least 10-point font. A sharp typeface will help reproduction. Be sure to single-space and stay within the borders!
TARGETED MULTI-STAGE ADOPTIVE T-CELL PARADIGM TO MODULATE IMMUNE RESPONSES
Asad Moten, MD; Hui-Kuan Lin, PhD; Kai Wucherpfennig, PhD; Lauren Wood, MD

Background: T cells possess potent anti-tumor activity and the presence of tumor-infiltrating CD8 T cells has been associated with a better prognosis for cancer patients. The adoptive transfer of tumor-specific T cells can overcome tumor-mediated suppression of immune responses.

Purpose: Recent clinical evidence suggests antibodies that block inhibitory receptors on T cells can induce anti-tumor responses in patients. This data supports our central hypothesis that silencing critical inhibitory pathways in CD8 T cells will substantially improve their effector functions within the suppressive tumor microenvironment.

Methods: Tumor-bearing mice were treated with intravenous administration of antigen-specific T cells expressing our shRNAs. We utilized a barcoding approach that permits the enrichment or loss of particular shRNAs in tumor-infiltrating T cells to be monitored with a custom microarray. Top candidate proteins identified in our initial screen were then studied in two other tumor models to determine their effects on the activation and effector functions of tumor-infiltrating T cells. Our study reveals both well-known and novel proteins contributing to the inactivation of T cells within the tumor microenvironment. Top candidate proteins of known function were subsequently studied for their ability to induce tumor regression in the physiologically relevant murine pnenl-1 melanoma model.

Results/Discussion: This study identifies key inhibitory pathways limiting the effector functions of tumor-infiltrating T cells. These results have both short and long-term implications for cancer immunotherapy. A detailed understanding of T-cell inhibition within the tumor microenvironment will allow us to develop novel therapeutics to block inhibitory proteins as well as engage other immune cell populations for dictating immune responses in various disease states.

Conclusions: All of these strategies may lead to the discovery of more targeted and effective therapies for immunomodulation in both immune suppressive and autoimmune disease states.

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MODERN PREVALENCE OF FAMILIAL CHYLOMICRONEMIA SYNDROME

**Background:** Familial Chylomicronemia Syndrome (FCS) is a rare genetic disorder characterized by an extreme elevation in fasting serum triglycerides (TG) > 750 mg/dL that is associated with a high risk of pancreatitis. Prior studies have estimated the prevalence of FCS at around 1:1,000,000.

**Method:** We retrospectively reviewed 1,627,763 patients seen at the Johns Hopkins Health System from 2013-2017 and identified those who met diagnostic criteria for FCS: 1) fasting TG >750 mg/dL, 2) either a personal history of pancreatitis, unexplained abdominal pain, and/or family history of hypertriglyceridemia, and 3) absence of secondary hypertriglyceridemia risk factors. We then compared them to controls, who had at least one secondary risk factor present but otherwise met diagnostic criteria.

**Results:** A total of 21 FCS patients and 89 controls were identified. FCS patients were more frequently male (86% vs. 53%; p=0.005) and more likely to have hypertension (48% vs. 28%; p=0.04). Groups did not differ in terms of age, race, body mass index, diabetes, HbA1c, or time to follow-up. FCS patients exhibited a trend toward increased rate of recurrent pancreatitis (48% vs. 27%; p=0.11). Acute coronary syndrome events were more common in controls than FCS (19% vs. 0%; p<0.04). Only 29% of FCS patients were seen by a lipid specialist, with 10% obtaining confirmatory genetic testing.

**Conclusion:** We demonstrate a higher than expected prevalence of FCS, roughly 13 times greater than prior estimates. Although both FCS and secondary hypertriglyceridemia lead to high rates of recurrent pancreatitis, FCS patients have significantly lower risk of atherosclerotic complications, consistent with their isolated triglyceride derangement. FCS is likely underdiagnosed in the modern era, and increasing effort should be made toward early identification and specialist referral for this difficult to manage, highly morbid disease.

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<table>
<thead>
<tr>
<th>Importance</th>
<th>For patients with resected, non-metastatic colorectal cancer (CRC), the optimal surveillance protocol remains unclear.</th>
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<tr>
<td>Objective</td>
<td>To evaluate whether serial circulating tumor DNA (ctDNA) levels could provide a measure of disease burden to augment conventional postoperative surveillance of patients with resected CRCs.</td>
</tr>
<tr>
<td>Design, Setting, and Participants</td>
<td>This prospective study included 319 blood samples from 58 patients, with Stage I, II or III CRCs, who underwent radical surgical resection at four Swedish hospitals from 2007 to 2013. Eighteen of these patients received adjuvant chemotherapy at the discretion of their clinicians, who were blinded to the ctDNA results. Blood samples were collected at one month postoperatively and every three to six months thereafter for ctDNA analysis. Patients were followed until metachronous metastases were detected, or else for a median of 49 months.</td>
</tr>
<tr>
<td>Main Outcomes and Measures</td>
<td>Sensitivity and timing of ctDNA positivity compared with conventional surveillance modalities (CT and CEA) for the detection of disease recurrence.</td>
</tr>
<tr>
<td>Results</td>
<td>ctDNA was positive in all (100%; 95% confidence interval (CI): 69% to 100%), ten patients who relapsed after definitive treatment. ctDNA positivity preceded radiologic and clinical evidence of recurrence by a median of 3 months. Forty-five patients had negative ctDNA throughout follow-up, all (100%; 95% CI 92% to 100%) of whom experienced no relapse (median follow-up: 49 months). However, three of the 48 (6%; 95% CI 1.3% to 17%) patients without relapse had a positive ctDNA, which subsequently fell to undetectable levels during follow-up.</td>
</tr>
<tr>
<td>Conclusion and Relevance</td>
<td>ctDNA can help diagnose recurrence earlier than radiographic imaging and CEA in patients with resected CRCs. Although the lead times in this study were modest (median: 3 months), a negative ctDNA throughout follow-up could identify patients who are unlikely to relapse. Although these findings need to be validated in a larger, prospective trial, they suggest that ctDNA could complement conventional surveillance strategies as a triage test to stratify patients with resected CRCs based on the risk of disease recurrence.</td>
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