edema inducing processes. The precipitating factor for developing ALI involves direct or indirect insult to the lungs. Recent studies have described metalloproteinase-3 (MMP3) to be elevated in plasma samples of patients with lung injury and potentially affected by tobacco use. MMP3 can degrade extracellular matrix components contributing to lung edema and inflammation. This study was conducted to examine the utility of matrix metalloproteinase-3 (MMP3) as a biomarker of lung injury. METHODS/STUDY POPULATION: We conducted a single center, retrospective cohort study of patients admitted to the medical ICU (MICU). De-identified bronchoalveolar fluid (BALF) samples were collected and stored at $-80C$. Enzymatic activity of MMP3 was determined using a fluorescent resonance energy transfer (FRET) assay. Demographics, comorbidities, evidence of lung injury and patient outcomes were collected. Data were reported with descriptive statistics and data was analyzed with t-tests for statistical significance. RESULTS/ANTICIPATED RESULTS: 55 patient BALF samples were included in the final analysis (mean age 58 +/-17, 58.2% male). 54.5% (n = 30) of patients were determined to have lung injury, 29% (n = 16) of patients had COPD and 45.5% (n = 25) of patients were smokers. MMP3 was higher in patients with lung injury (2363 vs 1052 maxV; p = 0.008). Smoking was associated with decreased MMP3 activity (1231 vs. 2215; p = 0.048). COPD was not associated with differences in MMP3 (1563 vs. 1852; p = 0.605). DISCUSSION/SIGNIFICANCE OF IMPACT: Lung Injury results in elevated MMP3 levels. Smoking was not shown to increase MMP3 levels and may in fact increase them. COPD demonstrated no effect on MMP3 levels. MMP3 levels may vary based on the mode of lung injury (i.e. direct vs indirect) and smoking may impact the activity of the enzyme. Further research should assess activity of MMP3 through different modes of lung injury.

4054

Telemedicine Infectious Diseases Consultation in Rural Hospitals: Feasibility, Acceptability, Appropriateness, and Implementation

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OBJECTIVES/GOALS: The objective of this study is to examine implementation science and clinical outcomes of telemedicine ID consultation at a rural Missouri hospital. METHODS/STUDY POPULATION: Pilot study, hybrid type 2, studying clinical outcomes (mortality, readmission, hospital transfer) and implementation outcomes assessed by survey and chart review (feasibility, acceptability, appropriateness, fidelity to guideline-based care). Telemedicine ID consultations are carried out for patients at Missouri Baptist Sullivan Hospital (MBSH) with positive blood cultures and charts reviewed for 30 days after hospital discharge. Patients, physicians, and staff complete surveys for implementation outcomes. The practical, robust implementation and sustainability model (PRISM) was chosen as the framework for this study and its future scale-up. RESULTS/ANTICIPATED RESULTS: There were 46 patients with positive blood cultures at MBSH, 20 of which were transferred or left from the ER before consultation could be offered. Eighteen patients had telemedicine ID consultation. The remaining 8 patients had contaminants in their blood cultures and therefore no consultation was offered. Of eligible patients not transferred, recruitment rate was 100% (18/18). Average total time per consult was 52.8 minutes on day 1, 8.5 minutes on day 2. 30-day mortality was 0%, 30-day readmission rate 5.5% (n = 1), hospital

transfer rate 5.5% (n = 1). 13 patients and 9 providers completed the feasibility, acceptability, and appropriateness survey with zero negative responses on any measure. DISCUSSION/SIGNIFICANCE OF IMPACT: Telemedicine ID consultation at a single rural hospital has thus far been received as feasible, acceptable, and appropriate. Scale-up of this model of care remains to be studied.

4189

The Changing Health and Social Circumstances of Women Leaving Jails: A Three-year Longitudinal Study

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OBJECTIVES/GOALS: To characterize the various social and health trajectories of women released from jail, and how these trajectories influence women's risky sexual and drug behaviors. To identify areas in which prevention programs and community interventions can be implemented to improve social and health outcomes. METHODS/STUDY POPULATION: The present study analyzes data collected as part of the sexual health empowerment (SHE Project) health literacy intervention. Participants were recruited from three county jails in the greater Kansas City area. At baseline, participants completed a survey that assessed participants' sociodemographic characteristics and social histories prior to incarceration. Women were recruited between 2014-2016 and followed up annually after program completion to complete follow-up surveys to assess long-term health and social circumstances. The present study is a secondary analysis of baseline and follow-up data. Final analyses will include survey data from 126 women. RESULTS/ANTICIPATED RESULTS: In this study, we use Hobfoll's Conservation of Resources (COR) Theory to conceptualize the impacts of stress on the social and health behaviors of justice-involved women in the years following release from jail. We hypothesize that "loss spirals", a term coined by Stevan Hobfoll, creates psychological stress that drive justice-involved women to assume behaviors that will generate more resources and help to cope with the stress. We expect to find that women struggle to maintain ties to stable housing, employment, and support, which we believe to be central to "loss spirals." Additionally, we expect to find that these "loss spirals" are associated with sexual and drug health risks. DISCUSSION/SIGNIFICANCE OF IMPACT: This study aims to define a succinct longitudinal timeline assessing biopsychosocial outcomes of women released from jail in order to improve prevention and intervention techniques for the improvement in social and health circumstances of women leaving jail and their reduction in recidivism.

4444

The effect of early life antibiotics on gut microbiome and fecal bile acid concentrations in children

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OBJECTIVES/GOALS: The current proposal seeks to investigate the effect of early life antibiotic use in the development of functional gastrointestinal (GI) disorders. We propose that infants exposed to

antibiotics will present with gut microbial dysbiosis, changes in fecal bile acid concentrations and develop more GI symptoms compared to unexposed children. METHODS/STUDY POPULATION: We analyzed fecal samples from 174 subjects at 12 months of age, of whom 52 were exposed to antibiotics in their first year of life. Of these, 33 subjects were sampled again at 24 months of age. DNA from 200mg of frozen stool ($-80C$) was isolated with the Qiagen DNeasy PowerSoil kit. Shotgun libraries were generated using the NexteraXT kit and sequenced on the Illumina HiSeq 2500 using 2x125 bp chemistry. Sequence data were analyzed using the Sunbeam metagenomics pipeline. The abundance of bacteria was estimated using Kraken version 2.0.8. Fecal bile acids will be quantified by liquid chromatography–mass spectrometry (LC-MS). RESULTS/ANTICIPATED RESULTS: Overall bacterial community composition at 12 or 24 months was not associated with antibiotic exposure (PERMANOVA test, Bray-Curtis distance). An increase in *Enterobacteriaceae*, in particular *Escherichia coli*, is a signature of antibiotic-induced dysbiosis, but also of early infant gut. Children with antibiotic exposure had slightly higher abundance of *Escherichia coli* compared to those with no exposure ($p = 0.03$). At 24 months, the abundance of *Bacteroides caccae*, a commensal gut species, was decreased for children exposed to antibiotics in the first year of life (fdr = 0.02). We will perform further analysis of bile acid modifying bacteria, fecal bile acid concentrations and correlate to GI symptoms. DISCUSSION/SIGNIFICANCE OF IMPACT: Our findings suggest a significant but nuanced impact of early life antibiotic use on the composition of the gut microbiota. The association of antibiotic exposure with *B. caccae* and *E. coli* warrant further attention in the context of the rapidly developing early-life microbiome. CONFLICT OF INTEREST DESCRIPTION: The authors declare no conflicts of interest relevant to this work.

4498

The Effect of the Affordable Care Act on the Stage at Diagnosis in Low income Privately Insured Cancer Patients, including those with Marketplace coverage

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OBJECTIVES/GOALS: The goal of this study was to examine the change in the odds of being diagnosed with metastatic cancer after the Affordable Care Act (ACA) among low-income, privately insured, nonelderly patients with newly diagnosed cancer. Low-income was defined as having income<250% FPL (federal poverty level). METHODS/STUDY POPULATION: Using Ohio cancer registry data linked with census tract-level income data, individuals aged 18-64 years diagnosed with one of the 15 leading cancers and reported being privately insured or uninsured were identified. Low-income patients were isolated using probability weighting, a process in which each observation was assigned a weight equal to the probability of a patient having an income <250% FPL based on the patient's census tract of residence. Then, a multivariable logistic model was fitted to examine the independent association between the exposure (Post-ACA, years 2015-2016 versus Pre-ACA, years 2012-2013) and the outcome (metastatic versus non-metastatic disease at diagnosis). RESULTS/ANTICIPATED RESULTS: Between the Pre-ACA and Post-ACA periods, the percent uninsured in the low-income study population decreased from 14.1% to 4.5% ($p < 0.01$). In the Post-ACA period, among those with insurance coverage, an estimated 11.7% of individuals had Marketplace coverage. After adjusting for potential confounders (sex, age, race-ethnicity,

marital status, community-level income, rurality, and cancer type), individuals diagnosed Post-ACA had 5% lower odds of having metastatic disease relative to Pre-ACA (Adjusted Odds Ratio: 0.95, 95% Confidence Interval: 0.91 - 0.99, $p = 0.04$). DISCUSSION/SIGNIFICANCE OF IMPACT: The shift towards non-metastatic disease likely reflects increases to coverage brought on by the marketplaces. However, the shift is smaller than those observed in Medicaid enrollees, suggesting that policy refinements in the marketplaces can further improve outcomes in low-income cancer patients.

4402

The effects of hemodilution *in vitro* on coagulation in term parturients using thromboelastometry

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OBJECTIVES/GOALS: Little is known about the effect of hemodilution with crystalloid on blood coagulation in obstetric patients. The purpose of our study was to examine the impact of hemodilution on components of blood coagulation using rotational thromboelastometry (ROTEM®) in term parturients METHODS/STUDY POPULATION: This is a prospective, observational pilot study including 35 healthy, pregnant patients at term ($\geq$37 weeks) without history of bleeding or clotting disorder or on medication affecting coagulation. Venous blood samples were collected from all patients and divided into specimen tubes to generate varying degrees of hemodilution with Plasma-Lyte (0%, 20%, 25%, 30%, 35%, 40%, 45%, 55%, 60%, 65%, 70%, 75%, 80%). Rotational thromboelastometry was then performed on samples to assess for coagulation changes. RESULTS/ANTICIPATED RESULTS: EXTEM (extrinsically activated assay) clotting time (CT) became prolonged at 65% hemodilution and above, and the median CT was in the coagulopathic range (>80 seconds) at a dilution of 80%. FIBTEM (extrinsically activated assay with platelet inhibitor, primarily measuring contribution of fibrinogen to coagulation) amplitude at 5 minutes (A5) began to diminish at 35% hemodilution, with the median A5 in the coagulopathic range (<12 mm) at 55% hemodilution. The area under the curve (AUC), a marker of clot strength, for EXTEM and FIBTEM consistently declined as hemodilution increased. Greater decreases in FIBTEM AUC were seen compared to EXTEM AUC, with the ratio of FIBTEM:EXTEM AUC at each dilution demonstrating a statistically significant difference from baseline. DISCUSSION/SIGNIFICANCE OF IMPACT: All thromboelastometry values demonstrated a hypocoagulable trend as hemodilution increased. However, the samples analyzed by the FIBTEM assay trended toward a coagulopathy at a lower degree of hemodilution compared to the EXTEM assay. As FIBTEM tests analyze the role of fibrinogen in hemostasis and EXTEM tests analyze the role of platelets, our findings suggest that platelets may be able to withstand higher degrees of hemodilution before impairing hemostasis compared to fibrinogen. These findings support the growing body of literature that in early stages of severe obstetric hemorrhage, the prioritization of fibrinogen replacement may be critical in preventing further coagulopathy. CONFLICT OF INTEREST DESCRIPTION: All authors have no conflicts of interest to report.