(20 females) matched for age and IQ. Children received a diagnostic evaluation using the K-SADS. Pre-processing was conducted using FreeSurfer. For ROI analyses, multivariate GLM models were conducted in SPSS for estimates of GMV to examine the main effects of diagnosis and sex, and sex-by-diagnosis interactions. Whole-brain analyses were conducted in FreeSurfer. Associations were examined between structure and parent ratings of callous-unemotional (CU) traits using the Inventory of Callous-Unemotional Traits in regression analyses in the DBD group, while controlling for the variance in aggressive behavior using the Child Behavior Checklist Aggressive Behavior Scale. All analyses controlled for differences in intracranial volume. RESULTS/ANTICIPATED RESULTS: Relative to controls, children with DBD showed reduced GMV in the bilateral amygdala (left: $p = .004$; right: $p = .04$). Sex-by-diagnosis interactions were observed in the left ventromedial prefrontal cortex ($p = .004$), right insula ($p = .001$), right inferior frontal gyrus ($p = .02$), and bilateral anterior cingulate (left: $p = .02$; right: $p = .01$) in which DBD males showed lower and DBD females showed higher GMV relative to respective controls. For whole-brain analyses, a significant sex-by-diagnosis interaction was observed in the left ventromedial prefrontal cortex and supramarginal gyrus indicating that DBD males showed lower and DBD females showed higher cortical thickness relative to respective controls. Sex-by-CU traits interactions were observed for left amygdala and ACC volumes. DISCUSSION/SIGNIFICANCE OF IMPACT: The current study provides evidence of reduced amygdala volume in children with DBD, and interactions between sex and diagnosis in the ventromedial prefrontal cortex and supramarginal gyrus, which may have implications for identifying sex-sensitive neural biomarkers. CONFLICT OF INTEREST DESCRIPTION: Disclosures: Dr. Sukhodolsky receives royalties from Guilford Press for a treatment manual on CBT for anger and aggression in children. Drs. Ibrahim, He, Pelphrey, McCarthy, and Mr. Li have no biomedical financial interests or potential conflicts of interest to declare related to this present study.

Special Delivery: Home Delivery of Healthy Food to Young Women during Pregnancy*

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OBJECTIVES/GOALS: Most pregnant youth (ages 14-24) gain more weight during pregnancy than recommended by clinical guidelines. We aim to describe the feasibility and acceptability of home grocery delivery of fruits, vegetables, and healthy snacks to promote healthy weight gain in this vulnerable population. METHODS/STUDY POPULATION: Participants were low-income pregnant youth in Michigan. Each participant was sent biweekly grocery deliveries consisting of $35 worth of fresh fruits, vegetables, and healthy snacks via the app-based delivery service, Shipt. Between deliveries, participants were prompted to respond to weekly text message-based surveys of a 24-hour food recall. This validated nutritional assessment quantifies consumption of fruit and vegetable servings. In addition, participants were asked to send daily photos and descriptions of foods they were eating. This study was approved by the University of Michigan Institutional Review Board. RESULTS/ANTICIPATED RESULTS: To date, 27 participants have been enrolled. Thirteen participants have completed their participation, 4.3 months on average, and were sent an average of 10 grocery deliveries each. In total, over 200 deliveries have been sent with 86% confirmed by the study participant (179/207). Additional outcomes to be assessed include: 1) text message response rates by participants and 2) content from photos and text descriptions of food eaten by participants. The 24-hour recall and text and photo messaging provided in-context data about grocery utilization. DISCUSSION/SIGNIFICANCE OF IMPACT: Grocery delivery is both feasible and acceptable to our youth participants. Use of grocery delivery constitutes a novel intervention to promote healthy weight gain in pregnancy for vulnerable populations through improving access to healthy food options.

Stepping Stones for Success in T3-T4 Translation: Building Collective Impact

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OBJECTIVES/GOALS: We will investigate the influence of multisector partnerships in T3-T4 research associated with advances in delivery systems, patient/population outcomes and health policy and the translational processes linked to these improvements. METHODS/STUDY POPULATION: We are using both quantitative and qualitative data to measure and analyze partnership characteristics linked to successful translation into practice & policy. We aim to complete 100 surveys of investigators who have conducted CTSA-supported T3-T4 research to examine partnerships, conditions of collective impact, and quantifiable changes in delivery systems, health outcomes, and policy. Using rigorous criteria, we will select projects for more in-depth interviews to understand the practices of successful translation and roadblocks and barriers that challenge translation. RESULTS/ANTICIPATED RESULTS: The anticipated research products include: (i) an analytic report on partnership structure and processes and the statistical associations to stages of change outcomes, (ii) a series of vignettes to describe the impact stories and translational processes, (iii) cross-project analysis of the data and vignettes to produce generalizable information to improve T3-T4 translation, and (iv) peer-reviewed manuscript(s) for publication. DISCUSSION/SIGNIFICANCE OF IMPACT: The study will inform and improve researcher competencies and accelerate translation in CTSA hubs that emphasize T3-T4 research. We will develop novel definitions of the T3-T4 research impact. Ultimately, the results will inform research training to better address real-world priorities and needs.

Stromelysin-1 as a biomarker for acute lung injury

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OBJECTIVES/GOALS: Acute lung Injury (ALI) has long been considered a proceeding event to the development of Acute Respiratory Distress Syndrome (ARDS). Diagnosis of classical ALI and ARDS remains difficult relies on clinical components of the Berlin Criteria, interpretation of radiographs and exclusion of pulmonary

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.

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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.

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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 time-line 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