stratified by risk quintiles for diabetes onset at 3 years. RESULTS/ANTICIPATED RESULTS: Results: Compared to usual care, lifestyle modification conferred positive benefits for all eligible individuals. Metformin's NMB was negative for the lowest population risk quintile. By avoiding use among individuals who would not benefit, targeted administration of metformin conferred a benefit of $500-$800 per person, depending on duration of treatment effect. When treating only 20% of the population (e.g., due to capacity constraints), targeting conferred a NMB of $14,000-$18,000 per person for lifestyle modification and $16,000-$20,000 for metformin. DISCUSSION/SIGNIFICANCE OF IMPACT: Conclusions: Metformin confers value only among higher risk individuals, so targeting its use is worthwhile. While lifestyle modification confers value for all eligible individuals, prioritizing the intervention to high risk patients when capacity is constrained substantially increases societal benefits.

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The Role of Suggestibility in Alcohol Use and Misuse

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OBJECTIVES/SPECIFIC AIMS: Suggestibility, defined as the inclination to accept and internalize messages, has not been assessed much in relation to alcohol use. Prior research has shown that suggestibility to social cues and peer influence may play a role in driving alcohol consumption. Our previous work has shown associations between suggestibility and alcohol consumption in social drinkers. This study aims to examine how suggestibility and social susceptibility are related to ideas alcohol consumption and consequences across the spectrum of alcohol use and misuse. We hypothesize that those with higher suggestibility and social susceptibility reports will also have higher alcohol consumption and consequences, and that the impact of susceptibility is lower in dependent compared to non-dependent drinkers. METHODS/STUDY POPULATION: Study participants enrolled in the NIAAA screening and assessment protocol (N=157) completed questionnaires on suggestibility and alcohol consumption, The Multidimensional Iowa Suggestibility Scale (MISS) is a 95-question self-report assessment of suggestibility which draws from subcategories of consumer suggestibility, perceivability, physiological suggestibility, physiological reactivity, and peer conformity. Alcohol measures included 90-day Timeline Followback interviews and the Alcohol Use Disorder Identification Test (AUDIT). Participants also underwent the Structured Clinical Interviews for DSM-IV or DSM-5 disorders, and were stratified into two groups: alcohol dependent (N = 86) and non-dependent (N=71). Median split by age was additionally used to explore age's relationship with suggestibility and alcohol with the under 36 (N = 45) and over 36 (N = 26) non-dependent groups. RESULTS/ANTICIPATED RESULTS: Initial analyses showed marked differences between the dependent and non-dependent groups in the relationship between the MISS total score and AUDIT total score. The non-dependent group showed significant positive correlations between MISS and AUDIT scores ($r = 0.460$, $p < 0.001$), while the dependent group did not show any correlation between MISS and AUDIT scores. Further examination of these relationships in the nondependent group revealed that MISS scores were also significantly positively correlated with AUDIT subscores of consumption, harm, and dependence. Age

was found to have a significant negative correlation with MISS score ($r = -0.354$, $p < 0.01$). To better understand the role of age, the sample was split based on the median age (36 yrs), and analyzed separately. Results indicated robust relationships between MISS score and AUDIT ($r = 0.457$, $p < 0.01$) in the younger age group. In addition, the younger age group also showed significant relationships between MISS score and 90-day TLFB measures of total drinks, days drinking, and heavy drinking days. DISCUSSION/SIGNIFICANCE OF IMPACT: In non-dependent individuals, there was a significant positive relationship between suggestibility and alcohol measures, and these effects were amplified in younger individuals. No relationship was found between suggestibility and alcohol measures in the alcohol dependent individuals. This may be related to a greater impact of social and external contextual cues in younger social drinkers compared to dependent drinkers where tolerance and craving may have greater impact on alcohol consumption. These findings have important implications for traits that may put individuals at risk for developing harmful patterns of alcohol use and misuse. Future analyses will aim to examine biobehavioral underpinnings of the relationship between suggestibility and alcohol consumption.

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The Study of Fetal Tracheal Occlusion to Treat Congenital Diaphragmatic Hernia in the EXTEND Model

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OBJECTIVES/SPECIFIC AIMS: The goal of this project is to study fetal pulmonary vasculature in a CDH animal model, to understand how FETO affects developing vasculature, and to develop a modifiable fetal tracheal occlusive therapeutic device that avoids previously seen sequelae of FETO, like alveolar distension, decreased surfactant production, and decreased Type II Pneumocytes. The primary outcome is lung volume/kilogram. The secondary outcomes are contrast-enhanced ultrasound perfusion metrics (Time to Peak, Mean Transit Time, Wash-in Rate, Wash-in Perfusion Index), pulmonary vascular density, Lung Injury Histology Scores, and Lung Compliance upon ventilation. METHODS/STUDY POPULATION: Congenital diaphragmatic hernias will be modeled by surgical hernia creation via maternal laparotomy and hysterotomy at gestational age 72 - 74 days. The ewe will undergo a second laparotomy at 105 - 115 days gestational age. After a second hysterotomy is made, the fetus will be removed from the amniotic sac, though placental circulation will be maintained (EXIT Procedure). The animal is cannulated via the umbilical vein and arteries onto the pumpless ECMO circuit. The balloon and pressure sensor complex is placed into the trachea via direct laryngoscopy, and the fetus aseptically sealed into the Biobag. The wires of the tracheal occlusive device (balloon catheter and pressure sensor) will egress via the port of the Biobag. The fetus remains in the Biobag for fourteen days, with the tracheal occlusive device in place for ten days, followed by a four day recovery period. Daily contrast-enhanced ultrasounds and pulmonary artery dopplers are performed. Upon study completion, the fetus is intubated and placed on a conventional ventilator. A full necropsy is then performed, with perfusion fixation of the lungs via the pulmonary artery. RESULTS/ANTICIPATED RESULTS: Hypothesis 1: Modifiable Tracheal Occlusion will have statistically different effects

on developing lung parenchyma, surfactant production, and abundance of Type II Pneumocytes Hypothesis 2: Modifiable Tracheal Occlusion will have lower levels of pulmonary hypertension than negative control animals, as measured by contrast-enhanced ultrasound (pulmonary artery velocity and washout time). DISCUSSION/ SIGNIFICANCE OF IMPACT: This project will provide insight into the development of pulmonary hypertension in the CDH fetus. It will provide insight into the physiology of FETO, a novel therapy for congenital diaphragmatic hernias, and will demonstrate the utility of the EXTEND System for fetal treatments that are not possible in the maternal uterus.

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Treatment Interruptions and Early Discontinuation of Hormone Therapy in Hormone Receptor-Positive Breast Cancer Patients

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OBJECTIVES/SPECIFIC AIMS: (1) To evaluate the association of patient and clinical factors with adherence to adjuvant hormone therapy (HT). (2) To examine the association of HT-related symptoms and the extent of remediation with early discontinuation of hormone therapy. METHODS/STUDY POPULATION: Retrospective cohort study of risk factors for interruption and early discontinuation of adjuvant hormone therapy in hormone receptor-positive nonmetastatic breast cancer patients diagnosed between 2009 and 2015. This study will include incident hormone receptor-positive breast cancer patients who initiated their HT and were followed at Tufts MC until Dec 31, 2016. Primary data source is electronic medical records (EMRs) RESULTS/ANTICIPATED RESULTS: The primary outcome of this study is early discontinuation to HT, defined as the first treatment gap of greater than or equal to 180 days following the initiation of HT. Treatment interruption, defined as any patient- or provider-initiated treatment gap of $\geq$ 2 weeks, will be examined as the secondary endpoint. Any HT-related symptoms occurred during a follow-up interval will be captured and categorized into five major types (i.e., vasomotor, neuropsychological, gastrointestinal, gynecological, and musculoskeletal symptoms). Onset and duration of a HT-related symptom will be recorded. Severity of the symptoms will also be rated by clinical oncologists. Remediations in response to HT- related symptoms will be collected and categorized into two groups (pharmacological or non-pharmacological) and whether they were patient- or provider-initiated. Response to a remediation is defined as complete relief, partial relied, no relief, or with worsening symptoms. Response to a treatment change (i.e., HT switch or hold) was collected separately but using the same criteria. Analyses will be performed on the association between patient and clinical factors with rates of nonadherence (unplanned treatment interruption and/or early discontinuation) of hormone therapy, respectively. We also will explore whether patients with elevated symptoms and/or incomplete remediation will have earlier discontinuation of hormone therapy. DISCUSSION/SIGNIFICANCE OF IMPACT: Through formal chart review, we will establish a dataset that contains highly detailed information about treatment-emergent symptoms and remediations, which will enable us to quantitatively assess the impact of these treatment factors on adherence to hormone therapy for breast cancer. The in-depth analysis of risk factors associated with nonadherence to hormone therapy will inform development of interventions to improve cancer outcomes.

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Understanding barriers to and facilitators of a healthy lifestyle of Hispanic adults with end stage renal disease in hemodialysis: Intensive Development and Experiences in Advancement of Research and Increased Opportunities (IDEARIO)

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OBJECTIVES/SPECIFIC AIMS: Physical inactivity and mineral imbalances greatly contribute to morbidity and mortality in patients with end-stage renal disease (ESRD). Barriers for engaging in physical activity and adhering to the hemodialysis diet have been reported predominantly with white participants from countries other than Puerto Rico. Therefore, this study's aims were to explore the barriers and facilitators that Hispanic adults with end-stage renal disease encountered for engaging in physical activity and adhering to the hemodialysis diet. METHODS/STUDY POPULATION: Three focus groups were conducted among 19 adults living with ESRD who received services from a renal center in Puerto Rico. Sessions were recorded, transcribed, and coded first using inductive methods. RESULTS/ANTICIPATED RESULTS: The presence of fatigue, lack of acceptance of the renal condition, and lack of knowledge of appropriate exercises for patients in hemodialysis were the most frequently reported barriers to engage in physical activities. Cost of the renal diet, limited availability of the renal diet products, the restrictive nature and the lack of Puerto Rican taste of the renal diet, and inadequate educational materials were the most frequent barriers to adhere to the hemodialysis diet reported by the sample. The most commonly reported facilitators to engaging in physical activities were having a positive attitude, opportunities for group exercises, and listening to Hispanic music while exercising. Health benefits, family support, having financial resources, availability of community resources, and having willpower were the most commonly reported facilitators to adhere to the hemodialysis diet. DISCUSSION/ SIGNIFICANCE OF IMPACT: We identified a number of culturally relevant individual, interpersonal, institutional, and community-related barriers and facilitators to physical activity and adherence to the hemodialysis diet in patients with ESRD living in Puerto Rico. Evidence-based solutions to overcome these barriers and strategies for enhancing these facilitators should be addressed in future studies aimed at increasing the level of physical activity and increasing adherence to the hemodialysis diet in patients with ESRD living in Puerto Rico.

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Understanding epicardial adipose biology by imaging, transcriptomic, and lipidomic profiling

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OBJECTIVES/SPECIFIC AIMS: The study aims to understand if pro inflammatory epicardial white adipose phenotype is positively associated with coronary atherosclerosis, while the brown adipose phenotype is negatively associated. Primary outcome is association between epicardial fat fraction and coronary atherosclerosis and cardiac function. Secondary outcome is transcriptomic and lipidomic profiling between epicardial, extra pericardial, and