characteristics may be associated with not only coronary artery disease, but also multiple chronic conditions. Having sleep disorders and reduced circadian amplitude can be associated with white matter microstructure and functional connectivity. These collaborations provided multiple funding and publication opportunities. DISCUSSION/SIGNIFICANCE: Interdisciplinary team research is important to enhance translational science. Although challenges were identified, using multiple methods and dataset sources with multidisciplinary team members enabled opportunities to explore multifaced topics related to sleep and brain aging.

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Extrapulmonary Gas Exchange Through Peritoneal Perfluorocarbon Perfusion

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OBJECTIVES/GOALS: For patients suffering from respiratory failure there are limited options to support gas exchange aside from mechanical ventilation. Our goal is to design, investigate, and refine a novel device for extrapulmonary gas exchange via peritoneal perfusion with perfluorocarbons (PFC) in an animal model. METHODS/STUDY POPULATION: Hypoxic respiratory failure will be modeled using 50 kg swine mechanically ventilated with subatmospheric (10-12%) oxygen. Through a midline laparotomy, two cannulas, one for inflow and one for outflow, will be placed into the peritoneal space. After abdominal closure, the cannulas will be connected to a device capable of draining, oxygenating, regulating temperature, filtering, and pumping perfluorodecalin at a rate of 3-4 liters per minute. During induced hypoxia, the physiologic response to PFC circulation through the peritoneal space will be monitored with invasive (e.g. arterial and venous blood gases) and non-invasive measurements (e.g. pulse oximetry). RESULTS/ANTICIPATED RESULTS: We anticipate that the initiation of oxygenated perfluorocarbons perfusion through the peritoneal space during induced hypoxia will create an increase in hemoglobin oxygen saturation and partial pressure of oxygen in arterial blood. As we expect gas exchange to be occurring in the microvascular beds of the peritoneal membrane, we expect to observe an increase in the venous blood oxygen content sampled from the inferior vena cava. Using other invasive hemodynamic measures (e.g. cardiac output) and blood samples taken from multiple venous sites, a quantifiable rate of oxygen delivery will be calculable. DISCUSSION/SIGNIFICANCE: Peritoneal perfluorocarbon perfusion, if able to deliver significant amounts of oxygen, would provide a potentially lifesaving therapy for patients in respiratory failure who are unable to be supported with mechanical ventilation alone, and are not candidates for extracorporeal membrane oxygenation.

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A TL1 Team Approach: Physician Strategies to Promote Physical Activity Among Youth with Comorbid Asthma and Overweight/Obesity*

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OBJECTIVES/GOALS: Youth with comorbid asthma and overweight/obesity (OW/OB) are at risk for increased morbidity. Physical activity (PA) engagement can mitigate risks, but the majority of youth do not meet national PA guidelines. This study examines caregiver and youth perspectives about ways physicians can promote PA in this population. METHODS/STUDY POPULATION: Participants included 20 adolescents (M age = 16.0; 55% male) with asthma and OW/OB and a primary caregiver (90% mothers). Caregivers and adolescents participated in separate semi-structured interviews about adolescent PA engagement, including questions regarding strategies for physicians to promote PA. Interviews were audio recorded, transcribed, and analyzed using NVivo. Two authors assigned conceptual codes to the transcripts to identify key concepts and then met to create a codebook. Authors independently coded 4 transcripts and met to resolve discrepancies. Authors then independently coded 2 additional transcripts (final kappa = .62) and met to reach consensus before dividing the remainder for coding. Codes were collapsed and sorted into themes, and attributes of each theme were determined. RESULTS/ANTICIPATED RESULTS: Dyads discussed the importance of physicians providing general (positive statements) and PA-specific encouragement. Dyads also stated that physicians should encourage teens to set and reach PA-related goals. Caregivers and youth reported that physicians should provide education about the importance of PA and ways to engage in PA, awareness about adolescents weight and its impact on health, and resources (camps, events, and locations). Additionally, caregivers and a teen noted that physicians should talk directly to and address questions toward teens. Dyads mentioned the importance of focusing on overall health (instead of weight) as well. Dyads also noted that physicians should avoid judgmental and shaming statements when talking about weight. DISCUSSION/SIGNIFICANCE: Results provide information about strategies physicians can use to promote PA among adolescents with asthma and OW/OB, a population that is at risk for low PA and poor health outcomes. Findings suggest that physicians may effectively motivate behavior change by providing health guidelines, encouragement, resources, and positive reinforcement.

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Impact of Maternal Diabetes on Neonatal Body Composition, Energy Homeostasis and Hypothalamic Salivary Gene Expression*

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OBJECTIVES/GOALS: Infants of diabetic mothers (IDMs) may exhibit decreased oral intake, requiring nasogastric feedings and prolonged hospitalization. We hypothesize that increased insulin exposure and resulting overgrowth in utero disrupts hypothalamic regulation of food intake, correlates to body composition and impacts feeding in IDMs. METHODS/STUDY POPULATION: Infants born at â‰¥ 35 weeks gestation to mothers with gestational or type II diabetes (IDM cohort), and normoglycemic mothers (control cohort) were recruited. Infants born to mothers with Type I DM or preeclampsia and with a history of intrauterine growth restriction, opioid exposure, or major congenital anomalies were excluded. Salivary expression of known hunger signaling genes 5AMP-activated protein kinase (AMPK), Neuropeptide Y receptor Y2 (NPY2R), leptin (LEP), ghrelin (GHRL), proopiomelanocortin (POMC), and adiponectin (ADIPOQ) were quantified using RT-