

sample to be reflective of larger genome samples that are publically available (e.g. e!Ensembl) - Initial analysis for COMTrs4680 did not reveal significant effects on IV-ASA measures. Specifically, the major DISCUSSION/SIGNIFICANCE OF IMPACT: Alcohol Use Disorder (AUD) affects millions of men and women globally. The heterogeneity within AUD individuals has made it difficult to identify biological and/or psychological factors that could be targeted for the development of treatments. By using the human laboratory model of free access IV-ASA, this study evaluated the relationship between dopaminergic genetic variants, COMTrs4680 and DRDRs1076560, and alcohol consumption in non-dependent drinkers within a controlled experimental environment. This study will begin to evaluate genetic and behavioral data that can be used to create a polygenic model of risk for AUD, which will provide more insight as to how the mesolimbic reward pathway is affected by alcohol use and contributes to risk for AUD.

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### Association between Transfer of Children from the Emergency Department and Pediatric Readiness of the Hospital

Monica Lieng<sup>1</sup>, Jennifer Rosenthal, Ilana Sigal, Parul Dayal, Sarah Haynes, Jamie Mouzoon, Amanda Favila and James Marciniak<sup>1</sup> UC Davis

**OBJECTIVES/SPECIFIC AIMS:** As pediatric care becomes more concentrated in large urban hospitals, smaller rural hospitals with reduced pediatric care capacity may opt to transfer pediatric patients to higher levels of care even if the patient has a condition that is manageable in a general ED. Up to 20-40% of pediatric transfers are considered avoidable, placing a burden on the patient, their family and the health care system. The aim of this study is to determine the association between pediatric readiness (as measured by the National Pediatric Readiness Project score) and risk of interfacility transfer. We hypothesized that emergency departments with higher measures of pediatric readiness would be less likely to transfer pediatric patients to another facility. **METHODS/STUDY POPULATION:** The most recent and complete National Pediatric Readiness Project data were from 300 California hospitals in 2012. These data include the overall pediatric readiness score, presence of inter-facility guidelines (written protocols on patients needing care not available at the hospital), presence of interfacility agreements (written agreements with other hospitals regarding transfer patients), and other variables on the facility's capacity to care for pediatric patients. We linked these hospital data with patient encounter data from the California Office of Statewide Health Planning and Development Emergency Department (ED) Database (OSHDPD) using hospital name and zip code. To be eligible for the study, the patient must have a documented ED encounter and be less than 18 years old during the encounter. A patient was considered a transfer patient if they were transferred to a separate general hospital, children's hospital, federal health care facility, rehabilitation facility, Critical Access Hospital or psychiatric hospital. Chi-square tests and t-tests were used for descriptive statistics. For non-normal data, we used the non-parametric Kruskal-Wallis test. We also used logistic regression to compare the odds of transfer between comparison groups. Statistical analyses were conducted in the R environment version 3.4.4. **RESULTS/ANTICIPATED RESULTS:** In 2012, there were 2,604,723 pediatric ED encounters, of which 10,966 resulted in a

transfer (0.4%). Transferred patients on average were older (15 vs. 5 years,  $p < 0.001$ ) and more likely to be female (58.6% vs 46.6%,  $p < 0.001$ ). The transfer group originated from hospitals with a lower median pediatric readiness score (76.0 vs 78.3,  $p < 0.001$ ). Patients were less likely to be transferred if they were seen at a hospital with written guidelines with transfer protocols (OR 0.89, 95% CI 0.83—0.95,  $p < 0.001$ ). Patients were more likely to be transferred if they were seen at a hospital with written interfacility agreements with other hospitals (OR 1.17, 95%CI 1.10—1.25,  $p < 0.001$ ). We anticipate, that even with more sophisticated multilevel statistical models, pediatric readiness scores will remain associated with odds of transfer. **DISCUSSION/SIGNIFICANCE OF IMPACT:** These preliminary data suggest that hospitals with higher levels of pediatric readiness and written guidelines with transfer protocols are less likely to transfer pediatric patients. There may be actionable policy and procedural items that a hospital could enact to lower the rate of transfer patients. Future analyses will include more complex statistical modeling to adjust for confounders, will include inpatient data, and will compare the risk of potentially avoidable transfers between hospitals with varying levels of pediatric readiness.

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### Association of blood pressure and biochemical knee cartilage composition assessed by T2 relaxation time measurements: Data from the Osteoarthritis Initiative

Walid Ashmeik<sup>1</sup>, Gabby B. Joseph, Michael C. Nevitt, Nancy E. Lane, Charles E. McCulloch and Thomas Link<sup>1</sup> University Of California, San Francisco

**OBJECTIVES/SPECIFIC AIMS:** The goal of this study was to investigate the associations of systolic blood pressure (SBP), diastolic blood pressure (DBP) and pulse pressure (PP) with knee articular cartilage composition using magnetic resonance imaging (MRI)-based T2 relaxation time measurements in study participants from the Osteoarthritis Initiative (OAI). **METHODS/STUDY POPULATION:** In this longitudinal study, 1,139 participants from the OAI, a multi-center, observational study of the evolution of knee OA, were selected using the following inclusion criteria: right knee Kellgren Lawrence (KL) score (radiographic classification of OA severity) 0-2 indicating no to mild radiographic OA at baseline, no history of rheumatoid arthritis at baseline, available blood pressure measurements at baseline, available T2 measurements in at least three knee compartments at baseline and 48-month follow-up. Linear regression models were performed using standardized values for SBP, DBP and PP as primary predictors and change in cartilage T2 over 48 months, a measure of cartilage matrix quality and degeneration, as the primary outcome. PP was defined as SBP minus DBP. Change in superficial layer and deep layer cartilage T2, which reflect differences in the laminar organization of knee cartilage T2, were also included as outcomes. Statistical models were adjusted for common risk factors for knee OA (baseline age, sex, BMI, KL score) as well as number of currently used anti-hypertensive medications (AHM) reported at baseline. We included AHMs whose primary indication was the treatment of hypertension including beta blockers, angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARB), thiazides, chlorthalidone, dihydropyridine calcium channel blockers (CCB) and aliskiren. All predictors, outcomes and covariates (except sex) were analyzed as continuous variables. We included interaction terms in the models to evaluate

whether the covariates (age, sex, BMI, KL score, number of AHMs) modified the association of SBP, DBP and PP with cartilage T2. RESULTS/ANTICIPATED RESULTS: The average age of all study participants was 58.8 years (SD  $\pm$  8.6) with a higher proportion of men (59.4%), average body mass index (BMI) was 28.3 (SD  $\pm$  4.5), average SBP was 122.4 (SD  $\pm$  15.4) mmHg, average DBP was 75.5 (SD  $\pm$  9.6) mmHg and 469 (38.1%) study participants were taking at least one AHM. Higher baseline DBP was significantly associated with a faster increase in global T2 (0.22 [0.10,0.35],  $P < 0.001$ ), global deep layer T2 (0.20 [0.03,0.36],  $P < 0.022$ ) and global superficial layer T2 (0.39 [0.20,0.58],  $P < 0.001$ ). These associations were significant in both unadjusted and the models adjusted for age, sex, BMI and KL score. No significant associations were found between SBP or PP and cartilage T2 and no significant interactions were found between SBP, DBP, PP and the covariates. DISCUSSION/SIGNIFICANCE OF IMPACT: Higher baseline DBP was associated with a faster increase in knee cartilage T2, suggesting accelerated cartilage degeneration. This association was stronger for the superficial layer of knee cartilage T2 compared to the deep layer. Although further basic mechanistic studies are needed to elucidate the underlying pathophysiology of this relationship, these results suggest lowering DBP may influence knee OA.

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### Associations between prenatal maternal stress due to a natural disaster and effortful control in early childhood

Nayra del Carmen Rodriguez-Soto<sup>1</sup> and Karen G Martinez, MD, MSc  
<sup>1</sup>University of Puerto Rico-Medical Sciences Campus

OBJECTIVES/SPECIFIC AIMS: For this reason, our overall objectives are to determine (i) whether natural disaster-related PNMS alters infants' EC at two years of age, and (ii) if the timing of exposure moderates its effects on toddlers EC. METHODS/STUDY POPULATION: We propose a longitudinal study with 50 mother-toddler dyads. Natural disaster-related PNMS would be measured at 12-18 and 24-30 months of age and will include: objective exposure and maternal distress. EC will be measured with a questionnaire and a Laboratory Temperament Assessment Battery at two years of age. To accomplish our objectives, we will conduct regression and moderation analyses. RESULTS/ANTICIPATED RESULTS: We anticipate that children exposed to Hurricane-related PNMS would present low EC levels compared to those with low prenatal exposure. DISCUSSION/SIGNIFICANCE OF IMPACT: These results are expected to provide evidence for further promoting early intervention and ameliorating adverse effects of PNMS on child outcomes.

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### Balancing Cost and Quality of Care in the US and Denmark: Lessons for Nations Transitioning from Volume-Based to Value-Based Care

Negin Fouladi<sup>1</sup> and Margit Malmlose, PhD, MSc  
<sup>1</sup>University of Maryland School of Public Health

OBJECTIVES/SPECIFIC AIMS: Promote knowledge translation and evidence-informed decision-making by assessing barriers and facilitators to balancing cost and quality of care within the US state of Maryland and nation of Denmark. METHODS/STUDY POPULATION: Open-ended and semi-structured key-informant

interviews were conducted in 2016 and 2017 among high level decision-makers in Maryland (N=21) and the Danish (N=17) healthcare systems, including hospital, local, regional, and cross-organizational administrators and elected officials. The interviews consisted of questions related to: (1) currently practiced and preferred approaches to resource allocation and development and use of quality performance measures, and (2) preferred sources, formats/styles, modes of information, and decision-making strategies based on a shift from volume to quality-driven care. RESULTS/ANTICIPATED RESULTS: Decision-makers in Maryland expressed the need for collaboration in a changing environment, yet increasingly rely on cost and quality outcomes data to drive decisions and note the struggle to identify credible and useful information. Maryland decision-makers also face challenges in regulating utilization and costs without mandated participation of physician practices within the global budget cap model, which is perceived to be a primary driver of healthcare utilization in the hospital sector. Similarly, decision-makers in Denmark conveyed the importance of quantitative data to aid decisions, however, stress collaboration and dialogue as driving factors and important sources of information. Danish decision-makers also express challenges to wide-spread adoption of a quality-driven approach due to unsustainable quality assurance regulatory bodies. DISCUSSION/SIGNIFICANCE OF IMPACT: The findings suggest implementation of value-based healthcare is highly driven and influenced by availability of credible data, which may significantly impact development of policies and innovative cost control strategies, and regulatory oversight to promote adoption of quality measures in decision-making. Furthermore, collaboration within and across healthcare organizations remains a key component to health system improvement as it fosters dialogue and sharing of best practices among stakeholders.

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### Barriers to Accessing Follow-up Care and Changes in Medical Needs after Childhood Injury

Teresa Maria Bell<sup>1</sup>, Ashley N Vctor, Dennis P Watson, Christopher A Harle and Aaron E Carroll  
<sup>1</sup>Indiana University School of Medicine

OBJECTIVES/SPECIFIC AIMS: The objective of this study was to prospectively assess caregiver-perceived barriers to accessing post-acute care for their injured child and determine if caregivers report ongoing, unmet health needs for their children after trauma. METHODS/STUDY POPULATION: This was a prospective cohort study that followed 50 participants for 6 months and administered surveys to parents of children who are admitted to a pediatric level 1 trauma center for injury. Surveys were given bi-weekly regarding care children received after hospital discharge. At 3 months, parents were surveyed over the phone on whether they were able to access all needed health services and if there were any perceived barriers to obtaining or providing at-home care. At 6 months, parents were given the Child & Family Follow-up Survey to assess ongoing physical, mental, social, and scholastic needs. Free responses and transcribed interviews were analyzed using thematic content analysis and frequencies are reported for discrete data. RESULTS/ANTICIPATED RESULTS: Out of 50 families recruited, 47 completed follow-up assessments. At 3 months, common themes regarding challenges after hospital discharge included difficulty scheduling specialist care; uncertainty in managing their child's pain; transitioning home without enough knowledge to meet their child's medical