who have used primarily either meth/amphetamine or cocaine for at least 5 years. The interviews will be coded for salient and recurrent themes and analyzed for code frequency, cooccurrences, clustering of themes and representative excerpts to highlight emergent themes as well as stressors and resilience factors at multiple levels. We aim to assess for substance use patterns, multiple domains of resiliency, medical and psychiatric complaints, and risk reduction strategies. We will recruit participants to match recent decedents from acute stimulant toxicity in various domains including salient demographic information and neighborhood characteristics. RESULTS/ANTICIPATED RESULTS: The anticipated results include a qualitative interview guide for living persons using stimulants in San Francisco to be used to gain insight into the community, illustrate participants' substance use practices, and allow for better characterization of several discrete resiliency factors that have protected the participants and other community members from suffering lethal stimulant toxicity. We expect to identify individual components (e.g. use patterns, use of harm reduction supplies), interpersonal/social factors (e.g. drug using network, friendships, community connection), and structural influences (e.g. access to care, safe use sites, house and economic stability) that all play a role in resiliency against lethal stimulant toxicity. DISCUSSION/SIGNIFICANCE: Stimulant use is common, along with rising deaths involving stimulants in urban counties and in smaller rural/non-metro counties which are disproportionately affected, posing a public health challenge. We will find discrete, modifiable risk and resiliency factors that can be manipulated to minimize the chances of outcomes like overdose and death.

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Racial-Ethnic Differences in Antipsychotic Initiation Among Youth with Diagnosed ADHD, Depression, or Conduct Disorder

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OBJECTIVES/GOALS: This study examined racial-ethnic differences in antipsychotic initiation within psychiatric diagnostic groups. This is a follow-up to our prior work, which reported that, overall, youth from minority backgrounds had 30-65% lower odds of initiating antipsychotics compared to White youth. METHODS/STUDY POPULATION: This study used 2009-2021 data from Optum's® Clinformatics® Data Mart, a database containing longitudinal patient information from nationwide commercial insurance claims. We created three separate samples of antipsychotic users and matched non-user controls between the ages of 6-17 years old. These groups contained individuals with clinically diagnosed ADHD, conduct disorder, and depressive disorder, respectively. We used conditional logistic regression to estimate the odds of antipsychotic initiation based on race-ethnicity within each diagnostic group. RESULTS/ANTICIPATED RESULTS: There were no racial-ethnic differences in the odds of antipsychotic initiation among youth diagnosed with ADHD. Among youth with depression diagnoses, Asian youth had 19% lower odds of initiating antipsychotics and Hispanic youth had 11% lower odds compared with White youth. Similar

results were observed for conduct disorders, with Asian and Black youth having approximately 10% lower odds of initiating antipsychotic treatment and Hispanic youth having 18% lower odds relative to White youth. DISCUSSION/SIGNIFICANCE: Previously observed lower rates of antipsychotic initiation among racial-ethnic minority groups may be at least partially due to factors leading to disparities in diagnosis. Further research is needed to evaluate factors that may lead to differential antipsychotic use, as the disparities may occur upstream of receiving clinical diagnoses.

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Cardio-Omentopexy to Reduce Myocardial Scarring and Promote Regeneration

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OBJECTIVES/GOALS: While the current management of single ventricle repairs has drastically prolonged life expectancy, the repair fails over time primarily through pathologic inflammation and fibrosis. Our goal is to demonstrate that cardio-omentopexy can decrease inflammation and fibrosis in swine after cryoinjury. METHODS/STUDY POPULATION: A cryoinjury is created using a liquid nitrogen cooled probe to the right ventricle of 15-20kg swine for three minutes. In half the groups the omentum is attached to the heart over the area of the injury. The swine are recovered and monitored for 4 or 8 weeks at which time they are euthanized. The injured area is evaluated via histological and immunohistochemical testing for markers of inflammation and scarring including collagen type, scar area, macrophage activity. RESULTS/ANTICIPATED RESULTS: Currently, we have successfully validated the animal model to create myocardial scar validated by histological testing. We anticipate that the addition of omentopexy to cryoinjury will decrease scar area, fibrosis and markers of chronic inflammation. Additionally, we expect an increase in myocytes in the area of injury. We expect that this will occur through the anti-inflammatory and protective mechanism of the omentum. DISCUSSION/SIGNIFICANCE: Cardio-omentopexy, if able to decrease fibrosis and preserve myocytes, may provide a useful adjunct to the treatment of single ventricle repair by prolonging the longevity of the repair. Additionally, as these repairs often require a ventriculotomy, decreasing the operative scar may preserve myocardial function.

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Characteristics of Infant Emergency Department Utilization

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OBJECTIVES/GOALS: Frequent utilizers of emergency departments (ED) make up a substantial share of overall ED use. Within pediatric emergency departments (PED), infants represent an age group that make up a disproportionate share of PED visits. The objective was to compare patterns of PED use for children less than 1 year of age by visit frequency and resource utilization. METHODS/STUDY POPULATION: Retrospective cohort study of infants less than 1

year presenting to 5 EDs in one health system over a 5-year period, with a 365-day follow-up after each index visit. Patient characteristics (age, sex, race/ethnicity, presence of chronic condition) and visit characteristics (arrival day/time, acuity level, disposition, testing (labs and radiographs, medications) were assessed. The relationship between patient and visit characteristics with utilization and repeat visits was assessed using multivariable regression. RESULTS/ANTICIPATED RESULTS: A total of 20,620 patients with 33,127 ED visits during study timeframe. Thirty three percent (n=6842) had more than one visit in a year; 3964 (19.2%) had two visits, 1542 (7.5%) had three visits, and 1336 (6.5%) had 4 or more visits. Across all visits, over half (52%) were low acuity. The most common diagnoses were respiratory diseases (27%), systemic states (including fever, viral illness, 23%), and gastrointestinal diseases (15%). These diagnoses remained the most common for those with 1, 2, 3, and ≥ 4 ED visits during follow up. As ED visit frequency increased, there was an increase in percentage of children who were older, non-Hispanic Black, and triaged as low acuity. Infants with ≥ 4 ED visits were more likely to be without a chronic condition, have no medications or testing ordered, and be discharged. DISCUSSION/SIGNIFICANCE: There was high ED utilization for those without chronic conditions who were least likely to need medications, testing, and hospital admission. With increasing attention paid to high-utilization in healthcare, it is important to assess why infants use the ED at high rates and develop systems to improve high value care while decreasing resource burden.

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A clinical trial using exergaming with augmented reality to promote physical activity in children with Cerebral Palsy at Children's Hospital Los Angeles

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OBJECTIVES/GOALS: Cerebral palsy (CP) is the most common motor disability in childhood in the US1. Augmented reality (AR) has promise enhancing engagement of rehabilitation[2]. We developed adaptive games for children with CP using Augment Therapy™. The goal of this study was to obtain user experience in the orthopedic clinic to inform a home-based clinical trial. METHODS/STUDY POPULATION: Participants were recruited at a pediatric center from July 1 to September 20, 2023. Inclusion criteria werediagnosis of CP, ages 5-10 years, English/Spanish speaking. Exclusion criteria were cognitive delay, audio or visual impairment, seizures, or recent surgery. The Augment Therapy™ app was delivered through a clinic iPad. The electronic medical record was used to screen eligible patients. 22 patients were screened; 14 were not eligible based on exclusion criteria. 2 patients refused based on not having enough time to participate. Children played 5 games and their movements were tracked using augmented reality. To evaluate the quality of the app, participants were asked to complete a validated questionnaire, the modified Mobile App Rating Scale. Descriptive statistics were used to analyze responses. RESULTS/ANTICIPATED RESULTS: Six participants were eligible and completed phase I. Eighty-three percent (5/6) of participants reported the character was mostly matching their child's movements and easy for their child to follow instructions. Thirty three percent (2/6) reported there were

technical issues where the app did not track or froze. 100% reported being interested in participating in the home clinical trial. Parent reported their child's favorite games were flying and obstacle course. The mean and median MARS score was 3.8/5 and 4/5, respectively. Regarding engagement, 66.7% (4/6) reported the app was fun to use. DISCUSSION/SIGNIFICANCE: Families of children with CP reported positive experiences overall with Augment Therapy™ mobile app. The technical issues will need to be addressed. Future studies will need to establish efficacy and dosing time of use of the app for adherence to a program using these modules and engagement with the app to increase habitual physical activity.

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Hypermobile Ehlers-Danlos Syndrome: Phenotypic Presentation, Comorbidity Risk, and Medical Service Utilization in the United States

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OBJECTIVES/GOALS: Hypermobile Ehlers-Danlos syndrome (hEDS) is a heritable connective tissue disorder with no known genetic etiology. Its complex phenotypic presentation with multisystem involvement delays proper diagnosis and treatment, especially for females. This study examines the risk for common hEDS comorbidities and medical service utilization. METHODS/STUDY POPULATION: Electronic health records from over 150 million patients across 92 American healthcare servers were queried using the TriNetX database to determine phenotypic presentation of hEDS and risk of receiving comorbid diagnoses. Contingency tables were created with hEDS as the condition and postural orthostatic tachycardia syndrome (POTS) or gastroparesis as the grouping variables. Advanced analytics were conducted to compare outcomes of two cohorts: (1) patients diagnosed with hEDS and both POTS and gastroparesis, and (2) patients with a sole diagnosis of hEDS. After propensity score matching, differences in medical service utilization and mental health diagnoses were assessed between these two cohorts. All analyses restricted age (12-70 years) and employed established exclusion criteria (e.g., diabetes). RESULTS/ANTICIPATED RESULTS: TriNetX national health records (N = 1,968) reveal that hEDS predominantly affects females (87%) and is diagnosed at a mean of 35 years of age. People diagnosed with hEDS have a high prevalence of comorbid nervous system (81%), mental health (76%), and digestive system (69%) disorders. They are 29.7 times more likely to be diagnosed with POTS [95% CI: 27.1, 32.6] and 66.3 times more likely to be diagnosed with gastroparesis [95% CI: 56.5, 77.9], compared to people without hEDS. After propensity score matching for sex, race, and ethnicity, people diagnosed with hEDS and both POTS and gastroparesis have significantly greater service utilization (72.2% vs. 56.7%; z = 2.18, p < .05) but not a greater incidence of mental health disorders (34.4% vs. 24.4%; z = 1.47, p = .14) than people diagnosed with hEDS alone. DISCUSSION/SIGNIFICANCE: This study reveals the phenotypic presentation of hEDS and the elevated risk of co-occurring POTS and/or gastroparesis diagnosis. hEDS and its comorbidities are associated with more frequent medical encounters but not with a greater incidence of mental illness. Findings have implications for both clinical practice guidelines and further research.