

an HLA-matched donor. This will be the largest study of haploidentical HCT in children. The data gathered will allow us to identify important donor characteristics to help guide physician decision-making when choosing a haploidentical donor.

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### Studies of epilepsy surgery outcomes are statistically underpowered.

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**OBJECTIVES/GOALS:** Low statistical power is a problem in many fields. We performed a systematic review to determine the median statistical power of studies of epilepsy surgery outcomes. **METHODS/STUDY POPULATION:** We performed a PubMed search for studies reporting epilepsy surgery outcomes for the years 1980-2000, focusing on studies using stereo-electroencephalography (SEEG). We extracted patient count data for comparisons of surgical outcome between groups, based on a prognostic factor. We defined a clinically meaningful difference the surgical outcome for MRI positive (66.9%) compared to MRI negative (45.5%) in the largest study in the series. The statistical power of a Chi-square test was computed as the percentage of simulated runs (10,000 repetitions) assuming this difference with a p-value less than 0.05. **RESULTS/ANTICIPATED RESULTS:** Based on 69 studies, the median sample size was 38 patients, and the median statistical power was 24%. This implies at least a 17% ( $0.5/[0.24+0.05]$ ) chance a study with a significant result in false, assuming 1:1 pre-test odds. A 'typical' SEEG study with 33 patients and 2:1 allocation had a median significant odds ratio of 6.5, which over-estimates the true odds ratio of 2.4. **DISCUSSION/SIGNIFICANCE:** Studies of epilepsy surgery outcomes using SEEG are statistically underpowered. This means true effects will be missed, the chance a study with a significant result is false will be inflated, and significant effects found will be over-estimated. Studies of surgery outcome need better statistical rigor if they are to reliably guide treatment.

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### The association between quitting electronic cigarette use in pregnancy and the risk of preterm birth and low birth weight<sup>†</sup>

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**OBJECTIVES/GOALS:** Nearly half of mothers who report electronic (e)-cigarette use during pregnancy believe e-cigarettes are less harmful than traditional cigarettes. We aim to determine the association of quitting e-cigarette use in pregnancy with the risk of preterm birth and low birth weight. **METHODS/STUDY POPULATION:** We conducted a cross-sectional study of women participating in the Pregnancy Risk Assessment Monitoring System and with live singleton birth during 2016-2019. Women were classified based on their e-cigarette use: before pregnancy only (quitters), last three months of pregnancy only (initiators), at both times (sustained users), and

neither time (non-users). We used a modified Poisson regression to determine the association between quitting e-cigarette use and preterm birth (<37 weeks) and low birth weight (<2,500 grams) adjusting for demographic, social-economic, and behavior-related risk factors. Analyses were weighted to account for the survey design and non-response. **RESULTS/ANTICIPATED RESULTS:** Based on 150,950 women who responded to the survey, there were estimated 2.9% quitters, 0.2% initiators, 1.0% sustained users, and 95.9% non-users in the U.S. Compared to sustained e-cigarette users, quitters had a similar risk in preterm birth (adjusted risk ratio [ARR]: 0.84, 95% confidence interval [CI]: 0.65, 1.08) and a significantly reduced risk in low birth weight (ARR: 0.77, 95%CI: 0.61, 0.97) adjusting for traditional cigarette use, age, race/ethnicity, education, marital status, family income, prior preterm birth, prior live births, BMI prior to pregnancy, pregnancy weight gain, kotelchuck index, multivitamin use, drinking prior to pregnancy, year of birth, and residential state. **DISCUSSION/SIGNIFICANCE:** As FDA authorizes the sales of certain e-cigarettes, women smokers may switch to e-cigarettes, believing they are reducing harm. Our study shows that quitting e-cigarette use is associated with a reduction of low birth weight. Clear messaging is needed to help women cease e-cigarette use in pregnancy.

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### Neurologic complications in children with seizures and respiratory illness: A comparison between SARS-CoV-2 and other respiratory viruses

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**OBJECTIVES/GOALS:** To compare rates and types of neurological symptoms in children hospitalized with seizures and respiratory infections, including SARS-CoV-2, influenza, and endemic coronaviruses. **METHODS/STUDY POPULATION:** Retrospective cohort study of children between 0-21 years of age admitted to a single pediatric free-standing quaternary referral center from January 1, 2014 to June 1, 2021 for seizures who had positive respiratory infection PCR for SARS-CoV-2, other coronaviruses (Coronavirus NL63 and Coronavirus OC34), influenza (A and B), adenovirus, Mycoplasma pneumoniae, and parainfluenza 3 or 4 infections. Patient characteristics including age, race, sex, ethnicity, hospital length of stay, intensive care unit admission, intubation, chest x-ray, and MRI results were included. The primary outcomes were rates of neurological diagnoses and mortality. **RESULTS/ANTICIPATED RESULTS:** A total of 883 children were included: 68 SARS-CoV-2, 232 influenza, and 187 with other coronaviruses (OC), 214 adenovirus, 20 M. pneumoniae, 121 parainfluenza 3, and 41 parainfluenza 4. Mortality rates were 0% M pneumoniae to 4.9% in parainfluenza 4, with 2.9% in SARS-CoV-2. Encephalopathy was noted in 5-15.6% and strokes were seen in all infections except for coronavirus OC43 and M. pneumoniae, with 4.9% in parainfluenza 4 and 5.9% in SARS-CoV-2. The most common brain MRI abnormality was diffusion restriction. Differences between SARS-CoV-2 and OC were observed in stroke (5.9% vs. 0.5%, p-value=0.019), ICU admission (50% vs. 69%, p-value=0.008), and intubation (19.1% vs. 34.8%, p-value=0.021, respectively). However, the rates of neurological symptoms were similar between SARS-CoV-2 and influenza. **DISCUSSION/SIGNIFICANCE:** We found higher rates of stroke, but lower rates of ICU admission and intubation in SARS-CoV-2 versus OC. Strokes were observed in many infections. Rates of neurological