preterm dyads pre and during COVID-19 METHODS/STUDY POPULATION: Total and HSV lysate, glycoprotein D (gD) and glycoprotein B (gB)-specific IgG, IgG1 and IgG3 as well as HSV neutralizing Abs (nAbs) and ADCC were quantified in paired 3rd-trimester pregnant women and their newborns (cord) blood. Transfer ratios (TR) were defined as cord:maternal Ab levels. IgG1 and IgG3 subclass and gD or gB-specific Abs were isolated by column purification and glycan profiles were assessed by mass spectrometry. The study population included 21 term and 15 preterm dyads who were HSV-1 (+/- HSV-2) seropositive enrolled between 2018-2019 (pre-COVID) and 25 additional HSV-1 (+/- HSV-2) seropositive term dyads whose mothers were SARS-CoV-2 PCR and COVID Ab+ at delivery; 14 were asymptomatic and 11 had mild-moderate COVID disease. None of the mothers had active genital HSV lesions during delivery RESULTS/ANTICIPATED RESULTS: Anti-HSV IgG, IgG1 and IgG3 TR were higher in term vs. preterm dyads ($p<0.05$). The nAb TR was 2.4 in term vs. 0.8 in preterm ($p<0.001$) but the ADCC TR was < 1.0 for both. To determine if the latter reflected antigenic target, subclass or glycans, we enriched for gD and gB specific and IgG1 and IgG3 Abs. The gD Abs were IgG1 and had only neutralizing activity. In contrast, gB Abs were polyfunctional and included IgG1 and IgG3 but only the IgG1 Abs had ADCC activity. The gD Abs were enriched for glycans associated with an affinity for the neonatal Fc receptor (FcRn); gB Abs expressed glycans associated with both FcRn and FcÎ³RIIIa binding. There was no significant difference in total HSV-specific IgG TR in pre-COVID vs post-COVID dyads but the nAb TR was lower ($p=0.018$) and ADCC TR higher ($p<0.001$) in the COVID compared to pre-COVID cohort DISCUSSION/SIGNIFICANCE: HSV ADCC Abs, which may provide greater protection than nAbs against neonatal disease, transfer poorly particularly to preterm newborns. However, in the setting of SARS-CoV-2, the TR of HSV ADCC is significantly higher. This may reflect alterations in the placental architecture and/or glycan composition which is currently being investigated.

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Using team science to support outbreak management in a large urban region during the COVID-19 pandemic

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OBJECTIVES/GOALS: To describe how the UCLA Clinical and Translational Science Institute (CTSI) assembled and deployed a science team in support of a local jurisdictions effort to manage and control COVID-19 outbreaks in one of the nations largest metropolitan regions, Los Angeles County (LAC). METHODS/STUDY POPULATION: During the COVID-19 pandemic (2020-21), building an efficient data infrastructure to support outbreak management became a priority for the local health department. In response, the UCLA CTSI assembled a science team with expertise across the translational continuum: epidemiology, laboratory and microbiology, machine learning, health policy, medicine and clinical care, and community engagement. The team partnered with a new LAC Data Science Team to foster a collaborative learning environment for scientists and public health personnel, employing improvement and implementation science to help mitigate COVID-19 outbreaks in sectors including healthcare, skilled nursing facilities, and K-12 education. The goal was a public health workforce that is prepared to problem-solve complex, evolving outbreaks. RESULTS/ANTICIPATED RESULTS: The science team created a learning environment with data modeling and visualization, problem-based learning, and active knowledge and skills acquisition. First, control charts and time series methods were used to visualize COVID-19 data and find signals for action. Second, a series of 16 Grand Rounds offered interactive sessions on problem-solving of outbreak challenges in different sectors. Third, a biweekly Public Health Digest provided fieldworkers with the latest scientific studies on COVID-19. All three elements guided and empowered the workforce to implement timelier, efficient outbreak mitigation strategies in the field. The partnered team also identified barriers to adoption of selected new data and management techniques, revealing areas for further skill-building and data-driven leadership. DISCUSSION/SIGNIFICANCE: The UCLA CTSI science team offered a backbone science infrastructure for helping public health and other sector agencies manage COVID-19 outbreaks and mitigation. It showed promise in bringing and translating science into public health practice. It revealed future priorities for CTSI innovation and scientific support of public agencies.

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Development and implementation of research team: Lessons learned from conducting studies focusing on sleep and brain aging

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OBJECTIVES/GOALS: This poster summarizes the development and implementation of research exploring the relationship between sleep and brain health. METHODS/STUDY POPULATION: Three pilot studies and two secondary data analyses were conducted on 20 older adults with coronary artery disease and 30 older adults without major cardiovascular disease. They were recruited for 10 older adults with multiple chronic conditions. The study included interviews, magnetic resonance imaging, and sleep assessment of participants. Data were also gathered from two secondary sources on multiple chronic conditions, sleep, neuroimaging, cognition, and Alzheimers biomarkers. RESULTS/ANTICIPATED RESULTS: The multidisciplinary team was from nursing, medicine, cardiology, psychology, neuroscience, radiology, and data science to address the separate research aims. The pilot studies and secondary data analyses were successfully implemented. The University of Iowa Institute for Clinical and Translational Science, Center for Advancing Multimorbidity Science, and Iowa Neuroscience Consortium supported the collaboration. The teams have found that sleep and circadian rhythms

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