

Assessing geographic variability in vaccination rates by VISNs will create the potential to generate targeted interventions within an existing VHA framework.

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### Interactive data displays for rapid responses to COVID-19 response in K-12 schools

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**OBJECTIVES/GOALS:** A UCLA Clinical and Translational Science Institute (CTSI) science team partnered with the second largest US school district, with over 500,000 K-12 students, to design and implement a statistical process control dashboard to guide COVID-19 response, including mitigation and vaccination outreach. **METHODS/STUDY POPULATION:** District data for students, teachers, and staff are updated daily and include COVID-19 test results, counts of quarantine after positive tests, and COVID-19 vaccination rates. Displays used a new hybrid Shewhart control chart to detect changes in test positivity rates and distinguish meaningful signals from noise (random day-to-day variation). The dashboard uses the Shiny and plotly packages in R to display interactive graphs of each data stream (cases, tests, and vaccinations) charted at multiple levels (districtwide, subdistricts, schools). Displays of variation over time show policy impacts and inequities. Selected displays use municipal COVID-19 data to complement district data. **RESULTS/ANTICIPATED RESULTS:** The district has used the displays to assess the impact of their COVID-19 response and to identify variation in close to real-time to suggest areas with need for additional resources for mitigation or vaccination. The CTSI team has continued to edit and add displays in response to the district's changing operational needs and questions. **DISCUSSION/SIGNIFICANCE:** The UCLA CTSI team developed and implemented a robust data visualization dashboard to monitor COVID-19 case rates and plan vaccination outreach efforts. Control charts enabled the district to distinguish noise from signal, thereby rapidly identifying when specific parts of the district needed targeted support to achieve equity goals.

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### Determining factors associated with treatment outcomes in patients with shoulder arthritis

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**OBJECTIVES/GOALS:** For shoulder osteoarthritis (OA), the understanding of the patient-specific factors that determine success of both non-operative and operative treatment options is limited. This study aims to identify key factors associated with the response and the heterogeneity of outcomes for both types of treatment.

**METHODS/STUDY POPULATION:** Patients diagnosed with shoulder OA and treated with either reverse/anatomic total shoulder arthroplasty (rTSA/TSA) or non-operative management at the University of California, San Francisco were enrolled in this study. They were followed for a year to ascertain phenotypic traits and patient-reported outcomes (PROs). Magnetic Resonance Imaging (MRI) was used to calculate the Shoulder Osteoarthritis Severity (SOAS) score, a semi-quantitative global assessment of shoulder OA, and to measure fat fractions of rotator cuff muscles. A Microsoft Kinect camera was used to determine the Reachable Workspace (RWS). Linear regression models were used to assess the associations between baseline demographic and radiographic factors on outcomes related to shoulder function. **RESULTS/ANTICIPATED RESULTS:** It is anticipated that the pre-operative MRI-based SOAS score will be inversely correlated with the magnitude of improvement in PROs 1 year after rTSA/TSA and non-operative management of shoulder OA for the surgical replacement and non-operative cohorts, respectively. Additionally, the non-operative patients who convert to rTSA/TSA within 1 year of observation will have higher SOAS scores compared to patients who continue with non-operative management. The surgical replacement patients with an infraspinatus fat fraction of more than 5% will have worse shoulder function, as measured by RWS, compared to patients with an infraspinatus fraction less than 5%. **DISCUSSION/SIGNIFICANCE:** MRI may be a novel technique to better predict prognosis of shoulder OA management. This will allow for the development of appropriate algorithms in the prescription of treatments and may be used to counsel patients regarding their expected outcomes or to recommend alternative treatments.

### Evaluation

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### Recruiting rural clinics to participate in an HPV vaccination intervention: protocol for a feasibility study and subsequent effectiveness trial

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**OBJECTIVES/GOALS:** Rural teens have lower human papillomavirus (HPV) vaccination rates than urban teens, promoting geographical cervical cancer disparities. Giving HPV vaccination earlier than the recommended 11-12 years might increase vaccination rates. We describe a feasibility study for recruiting rural clinics to participate in early HPV vaccination studies. **METHODS/STUDY POPULATION:** Leveraging professional contacts, we identified two clinics in North Carolina that serve predominantly rural populations. To assess the feasibility of adapting clinic monitoring systems to promote early vaccination, we requested to review electronic medical records (EMR) to identify the size of the vaccine-eligible patient population, HPV vaccination coverage, and the accuracy of EMR queries to monitor HPV vaccination status. Next, we completed in-depth interviews with clinic staff to collect insights on perceived advantages and disadvantages of promoting early HPV vaccination at 9-10 years, and potential facilitators and barriers to doing so. **RESULTS/ANTICIPATED RESULTS:** We expect that existing clinic systems will easily accommodate early recommendation and administration of HPV vaccine by expanding EMR queries and vaccination status indicators to include 9- and 10-year-olds. Clinics that are interested in promoting early HPV

vaccination can use these adapted tools to monitor vaccine coverage over time. From in-depth interviews we expect to encounter a mix of support and hesitation to promote early HPV vaccination, based on personal beliefs on safety and effectiveness of HPV vaccination, perceptions of adolescent HPV risk, perceptions of parental acceptability of HPV vaccination, and perceived burden of changing current clinic protocols. **DISCUSSION/SIGNIFICANCE:** This feasibility study's findings will help determine clinic readiness to recommend early HPV vaccination, and intervention components that maximize staff acceptability of early HPV vaccination. A subsequent randomized effectiveness study will evaluate early HPV vaccination as a method to increase rural adolescent vaccination coverage.

### *Health Equity and Community Engagement*

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#### **“It’s okay with our culture but were in a different place and we have to show respect”: Marshallese migration and the impact on exclusive breastfeeding initiation**

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**OBJECTIVES/GOALS:** Pacific Islanders have some of the lowest rates of initiation and duration of exclusive breastfeeding compared to other racial women once they migrate to the United States. The purpose of this study is to identify infant feeding initiation, beliefs, and experiences of Marshallese women living in the United States soon after delivery. **METHODS/STUDY POPULATION:** This study used an exploratory, descriptive qualitative design with 36 Marshallese women residing in the United States from July 2019 to July 2020. A Community Based Participatory Research Approach was used to design and implement the study. This approach enables the respect and integration of Marshallese cultural values and practices into every aspect of the research. All study plans and documents – including recruitment plans and forms, consent plans and forms, retention plans, quantitative surveys, and qualitative interview guides – were developed in partnership with Marshallese research team members. **RESULTS/ANTICIPATED RESULTS:** Two themes emerged: 1) Infant Feeding Initiation and Practices; and 2) Concerns of Breastfeeding in Public. Within the first theme, two subthemes emerged: 1) Breast and Formula-Feeding; and 2) Return to Work. Within the second theme, two subthemes emerged: 1) Personal Beliefs about Breastfeeding in Public; and 2) Acculturation and Breastfeeding in Public. **DISCUSSION/SIGNIFICANCE:** This is the first study to document beliefs about exclusive breastfeeding initiation among Marshallese women living in the United States. Findings from this study can be used to develop health education programs to improve exclusive breastfeeding and can be used to stimulate future research in the area of breastfeeding among Pacific Islander women.

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#### **Enhancing Inclusion of Older Adults in Research: What do Older Adults Think?**

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**OBJECTIVES/GOALS:** Older adults are included in clinical research infrequently compared to their burden of chronic illness. The goal for this study is to learn from older adults about their lived experiences with research and use this knowledge to develop tools and solutions aimed at increasing their inclusion. **METHODS/STUDY POPULATION:** This study utilized the 5T Model (developed by Duke CTSA) and Community Engagement Studio (CES) (developed by Vanderbilt CTSA) to connect and engage with community experts (older adults and those who work with older adults) in Oregon. Two CES were completed with 14 community experts and 4 investigators interested in including older adults in their studies. Participants took part in a 2-hour facilitated discussion to gain insight from their perspectives on research. The 5T Model was shared with participants and used to guide the discussion and elicit feedback on the model and identify gaps in resources and training needed for investigators to enhance inclusion of older adults in research. **RESULTS/ANTICIPATED RESULTS:** Trust, relationships, education, and diversity were themes identified across all of the 5Ts. Participants discussed the need for inclusion and diversity within research, with an emphasis on those at the oldest ages, rural populations, and lower socioeconomic status. Participants acknowledged both investigators and participants require more education, with a great need for improving health literacy for research participants. Participants saw trust and relationships as an integral part of older adult inclusion in research, with the relationship being not only that between investigator and participant, but between them and the communities that support older adults, including family members. **DISCUSSION/SIGNIFICANCE:** This study highlighted the voices of older adult research participants, allowing for participant-informed findings and solution development. Future directions will focus on developing and refining tools and resources for investigators and expanding to other underrepresented populations.

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#### **Galveston County Youth Risk Survey: A Glimpse into Our Children’s Health and Wellbeing**

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**OBJECTIVES/GOALS:** The 2020-2021 Galveston County Youth Risk Survey continues past efforts to characterize behavioral risks for local youth, identify disproportionate risks among groups, and provide the data needed for action and intervention to improve the health and safety of our youth in Galveston, Texas. **METHODS/**