information on violent deaths, we extracted demographic and circumstantial data on 172,135 suicide decedents ≥ 25 years old in participating states from 2003-2017. Of these, we found complete information regarding demographics, occupation, and circumstance for 160,159 suicide decedents. We separated suicide decedents by physician-status and compared 795 physicians to 159,364 non-physician decedents using chi-squared test. We then used multivariate logistic regression to examine differences in suicide method and circumstance by physician-status status, controlling for age, sex, and race. RESULTS/ANTICIPATED RESULTS: Compared to non-physicians, physicians were more likely to be male (84.5% vs 77.3%, p<0.001) and older (45.1% ≥65 vs. 17.8%, p<0.001). Controlling for demographics, physicians were less likely to complete suicide by firearm (aOR=0.60, 95%CI=0.51-0.71) but were more likely to suicide by overdose (aOR=1.41, 95%CI=1.13-1.77) or cutting (aOR=2.81, 95%CI=2.03-3.88). Physicians were more likely to have job related stressors (aOR=2.24, 95%Cl=1.83-2.74) and legal problems (aOR=2.34, 95%Cl=1.70-3.21). Physicians were also more likely to leave a suicide note (aOR=1.48, 95%Cl=1.26-1.73) but were less likely to be intoxicated on alcohol at time of death (aOR=0.76, 95%Cl=0.62-0.93). Physicians were no different than non-physicians in terms of financial or relational stressors. DISCUSSION/SIGNIFICANCE: Physicians are more likely to be male and older. Given their medical training, overdose and cutting may be more accessible and lethal methods for physicians. Physicians are more likely to leave a suicide note and less likely to be intoxicated, which may imply less impulsivity. Job stressors and legal problems may also contribute to physician suicide.

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Genomic surveillance for SARS-CoV-2 for New Mexico and the Mountain West

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OBJECTIVES/GOALS: Understanding how SARS-CoV-2 is evolving as well as spreading within and between communities is vital for the design of rational, evidence-based control measures. Continuous genomic surveillance is imperative to identify and track variants and can be paired with clinical data, to identify associations with severity or vaccine breakthroughs. METHODS/STUDY POPULATION: In June of 2021, we established UNM as a CDC-funded hub for genomic surveillance of SARS-CoV-2 for New Mexico and 3 other Rocky Mountain region states (Wyoming, Idaho, Montana). Through our Rocky Mountain COVID Consortium (RMCC), we have sequenced over 6,000 genomes of SARS-CoV-2 from RMCC partners. For New Mexico we integrate county and zip code data to provide more granular insights into how SARS-CoV-2, and particular variants, are transmitting within the state. We also pair this data with vaccine breakthrough cases identified by the NMDOH, as well as with clinical outcome data. RESULTS/ANTICIPATED RESULTS: We sequenced over 6,000 SARS-CoV-2 genomes from New Mexico (n=3091), Idaho (n=1538), Arkansas (n=1101), Wyoming (n=251), and Montana (n=33). We used this data to infer the transmission dynamics, identify variants, and map the spread of the virus. We identified a novel local variant that spread across New Mexico in early 2021, but was quickly replaced by the Alpha variant. In all RMCC states, the Delta variant overtook Alpha and has become nearly the only variant currently circulating in these states. We identified sequenced isolates from vaccine breakthrough cases in NM and demonstrate their role in onward transmission. We can identify shifts at a county or zip-code level in circulating lineages which may correspond to clinical outcomes or fluctuating case counts. DISCUSSION/SIGNIFICANCE: This integrated genomic data can be used by policy and decision makers within the New Mexico Department of Health and our RMCC partners to guide their public health response to the COVID-19 pandemic.

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Identifying Barriers to HPV-Vaccination in the US Veteran Population

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OBJECTIVES/GOALS: In the United States, oropharyngeal cancer (OPC) is the leading human papilloma-virus (HPV) related malignancy, and OPC rates are increasing among the US veteran population. The purpose of this study is to identify demographic and regional factors that may be associated with low HPV-vaccination rates among the US veteran population. METHODS/STUDY POPULATION: This study will use Veterans Health Administration (VHA) administrative data to create a national cross-sectional cohort of veterans ages 18-45 with a VHA primary care visit from 2018-2020. HPV-vaccination status of each subject (initiation of vaccination series, completion of vaccination regimen, and age vaccinated) will be determined. Differences in the prevalence of HPV-vaccination by smoking status, geographic location, socio-economic status, race/ethnicity, and rural-urban context will be examined in the unadjusted analysis. Factors associated with low HPV-vaccination rates in the VHA will be identified using multivariable logistic regression to model no (vs any) HPV-vaccination, no completion (vs completion) of HPV-vaccination recommendations, and non-routine (vs routine) HPV-vaccination: RESULTS/ANTICIPATED RESULTS: In 2019, HPV-vaccination guidelines were expanded to include some adults between the ages of 26-45, making many young veterans in the VHA eligible for vaccination. From this study's recently generated dataset, more than 1.2 million subjects (n=1,219,896) met the study inclusion criteria. Extrapolating from trends in the civilian population, it is anticipated that HPV-vaccination rates will be lower among African Americans compared to non-Hispanic Caucasian Americans, within the South Central and Southeastern regions of the US, and in rural communities. This study will define a veteran's geographic location by their associated Veteran Affairs Integrated Service Network (or VISN), which are groups responsible for healthcare planning and resource allocation in particular regions of the US: DISCUSSION/SIGNIFICANCE: Identifying factors associated with low HPV-vaccination rates within the VHA will be the first step to reducing future incidence of HPV-related cancer burden among US veterans.

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