Agency: Los Angeles County Department of Health

Project Title:
Developing an Early Alert and Monitoring System for Hospitals at High Risk of Exceeding Surge Capacity

Project Description:
Hospital capacity is a serious concern especially during periods of high COVID-19 community transmission, though public health authorities lack a centralized system to measure this in a timely manner. The quality of care was impacted severely during COVID-19 surges as a result of lower hospital capacity, including reduced staffing, and increased the risk of nosocomial transmission in overcrowded facilities. This project will allow us to create an early alert and monitoring system for hospitals at risk of exceeding surge capacity to guide rapid roll-out of local, state and national resources for hospitals disproportionally impacted by COVID.

Methods
The Los Angeles County Department of Public Health (LACDPH) Healthcare Outreach Unit will conduct a spatial analysis of COVID-19 hospitalizations to 1) identify geographic areas and patient-sharing networks with a higher number of COVID-19 hospitalizations than expected, 2) monitor secular and population trends in hospitalizations for these areas, and 3) detect hospitals which are likely to exceed surge capacity through forecasting, predictive modeling, and spatial scanning... These objectives will be accomplished using datasets from ongoing LACDPH prospective data sources: the Hospital Electronic Surveillance System (CHESS) which collects data on hospitalized COVID-19 patients from 82 hospitals in Los Angeles County (LAC) and the Integrated Reporting, Investigation and Surveillance System (IRIS) which contains case demographic and laboratory data. The project will build upon prior pilots using SaTScan to identify hospitalization clusters and R shiny dashboards to visualize hospitalization metrics. GIS will be used to create maps with the different layers of interest. A prospective COVID-19 surge surveillance report, including early alert threshold triggers for when a hospital is at risk of exceeding their surge capacity, will be developed using SAS, R, Python, and data visualization software.