



# BETTER HEALTH CARE WITH LESS HEALTH SPENDING

The Stanford Clinical Excellence Research Center (CERC) is discovering new care delivery methods to solve our nation's persisting crisis in the affordability of excellent care.

## CERC FORECASTING TOOL HELPS THREE COUNTRIES MEET COVID-19 DEMAND MORE EFFICIENTLY

A rapidly mobilized CERC-led research team is enabling hospitals and governments to continuously forecast COVID-19 demand for hospital supplies and staffing. Sensing imminent gross mismatches of supply and demand for COVID-19 care, CERC assembled faculty and graduate students from Stanford's schools of engineering, business, and medicine to develop calculators to project hospitalizations, ICU occupancy, ventilator use, and staffing for nations, regions, or single hospitals. Built to operate with open source software, widely available demographic data, and publicly reported COVID-19 case data, the CERC-organized research team responded to more than 3,000 inquiries for tool access.

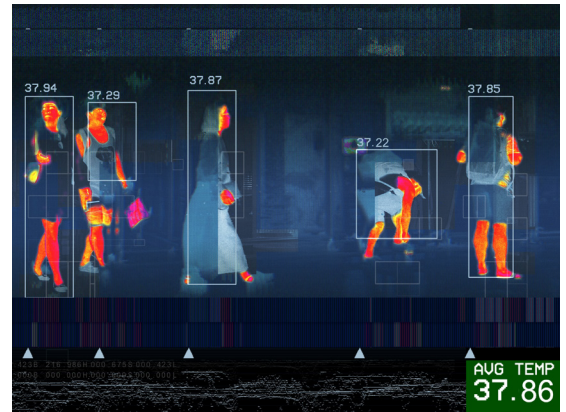


*Long lines form outside of Elmhurst Hospital Center in the Queens borough of New York City as people wait to be tested for COVID-19 on March 23, 2020.*  
Sipa USA/Alamy Live News

The California Department of Public Health was an early user, generating projections for every California county. Santa Clara and San Mateo County governments accessed the tool to track available beds and assess past interventions. The initiative was led by systems engineering researcher David Scheinker, PhD, and health-care researcher Kevin Schulman, MD. Their research team also customized the tool for the University of Toronto and Tel Aviv University to apply throughout Canada and Israel. Posted on multiple Stanford websites and downloaded by hospital administrators and government planners, the tool helped them to more accurately match staff, costly ventilators, and scarce personal protective equipment with COVID-19 patients' downstream care needs.

## PANDEMIC ACCELERATES CERC COMPUTER VISION RESEARCH AT STANFORD AND INTERMOUNTAIN

Recognizing the potential of artificial intelligence (AI) to profoundly improve bedside care for seriously ill patients—such as those with COVID-19—Stanford Hospital expanded by two-fold its installation of CERC researchers' computer vision-based sensors in ICU patient rooms and hallways. By the end of the third quarter, Stanford Hospital will operate computer vision sensors in at least half of patient rooms and nearby corridors in two ICUs. A similar acceleration of CERC computer vision research, in partnership with collaborators at Intermountain HealthCare, will occur at LDS Hospital in Salt Lake City, Utah.



AI-assisted remote monitoring of patient and bedside clinician activity is particularly important when ICUs face shortages of staff and personal protective equipment. Developed via CERC's Partnership for AI-Assisted Care (PAC) with Fei-Fei Li, PhD, the Sequoia Capital Professor in Stanford's Computer Science Department, research success will allow 24/7 instant detection and correction of ominous activity such as weary clinicians' hand hygiene errors or confused patients struggling to remove intravenous lines.

The project builds on PAC research over the past eight years demonstrating high accuracy and hospital staff openness to surveillance and real-time guidance when caring for patients in extremely fragile states. CERC is able to accelerate this research thanks to a \$1 million challenge gift from the Eric and Wendy Schmidt Foundation. If matched by other donors, the new funding will enable PAC research to become more generalizable via expansion to as many as 10 new hospital ICU research sites. Funding will also enable the research team to partner with medical ethicists to develop ethical guidelines for computer surveillance of staff and patients in circumstances of extraordinary vulnerability to medical error.

## CERC TO CO-LEAD STUDY OF CONVALESCENT PLASMA TO MODERATE THE HEALTH AND COST IMPACT OF COVID-19 INFECTION

The FDA granted an Investigational New Drug (IND) to CERC faculty member Kevin Schulman, MD, who will co-lead a multi-site national clinical trial of convalescent plasma. Plasma with antibodies to COVID-19 offers potential to reduce disease severity and cost. If effective, such therapy would be a more widely accessible low-cost alternative to expensive drug-based antivirals.

With support from the federal Biomedical Advanced Research and Development Authority, the trial expanded from 206 to 600 patients across 40 U.S. hospitals. The research team will begin recruiting patients in June. The trial will treat actively symptomatic emergency department COVID-19 patients who do not require hospitalization. Convalescent plasma therapy involves transfusions from recovered COVID-19 patients to newly symptomatic COVID-19 positive patients. The idea is not new—convalescent plasma treatment was recently developed and used with success during the recent Ebola crisis.

