UC San Diego
UC San Diego News Center

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Mobile Life Support Delivered to Area Hospitals During COVID-19 Pandemic

Transportable heart-and-lung machine provides lifesaving care to critically ill patients

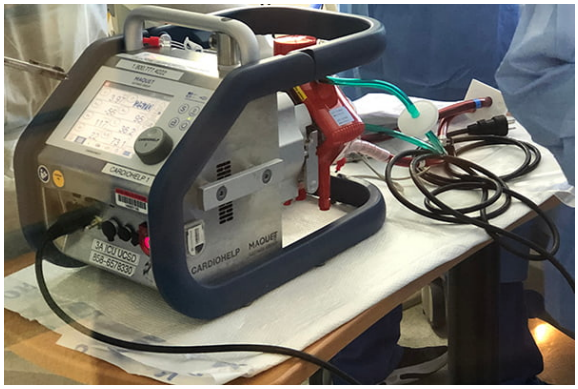
News coverage of the coronavirus pandemic has been fraught with stories and images of patients hospitalized with COVID-19 struggling for breath, often involving mechanical lung support. However, a small number of patients become so ill that a ventilator alone cannot sustain life and help doctors get the patient on the road to recovery. When all else fails, these patients require extracorporeal membrane oxygenation, or ECMO.

UC San Diego Health deploys mobile life support to area hospitals.

“Patients who require ECMO are the sickest of the sick. They are beyond being kept alive by a ventilator and need full support to keep the brain, heart, liver and kidneys supplied with oxygen,” said Robert Owens, MD, a pulmonary, critical care and sleep specialist at UC San Diego Health. “The challenge is that not all hospitals have this technology. Fortunately UC San Diego Health has this capability and has made it mobile to benefit patients, even those cared for initially at other hospitals.”

“Seeing the uptick in COVID-19 cases, particularly at the border, and knowing that these patients are too sick to transfer, we knew we had to go mobile,” said Cassia Yi, clinical nurse specialist and acute mechanical circulatory support coordinator at UC San Diego Health. “In the last three weeks, we have provided mobile ECMO to five patients with COVID-19, either because their hospital did not offer the technology or because the hospital’s own ECMO-service was maxed out. The average age was 55 years old.”

ECMO is a technology that works outside the body, pumping and oxygenating a patient's blood. The patient is connected to ECMO during a bedside procedure via tubes inserted typically by a cardiothoracic surgeon in large arteries or veins in the neck and groin. Once connected, the overworked heart and lungs are able to rest and heal.



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"During ECMO, blood from the patient flows through tubing to an artificial lung that adds oxygen and takes out carbon dioxide. The blood is warmed to body temperature and pumped back into the body," said Travis Pollema, DO, a cardiac surgeon at UC San Diego Health. "Essentially, ECMO provides advanced life-support, helping support a weakened heart or damaged lungs until the patient can recover or be bridged to further therapy."

Owens added that the ECMO program at UC San Diego Health is unique because patients begin vital physical and occupational therapy while still on the machine, and then can follow up in a post-ICU recovery care clinic.

"Putting patients on ECMO alone is not enough. UC San Diego's model of care is different in that our team starts engaging patients mentally and physically, while on ECMO," said Owens. "We believe that this proactive, multidisciplinary approach to ICU care and recovery helps patients achieve better quality of life and long-term outcomes."

"Patients actively participate in their recovery," Pollema said. "They interact with the care teams, sit up in their bed or a chair, walk, and even see their families via video calls. It's an exciting approach. The payoff is seeing our patients return home after being so sick."

The San Diego County ECMO consortium was formed in March 2020 and includes ECMO leaders and physicians from all of the county's ECMO centers. The group has developed timely guidelines for ECMO use during the COVID-19 pandemic in order to maximize equipment and resources.

UC San Diego Health launched its mobile ECMO program in April with a multidisciplinary team that includes pulmonologists, surgeons, nurses, and

UC San Diego Health' mobile ECMO program has a multidisciplinary team that includes pulmonologists, surgeons, nurses, and perfusionists.

perfusionists with expertise in critical care medicine. The mobile ECMO service can be deployed within roughly 300 miles of any of UC San Diego's locations with assistance of Mercy Air, Advantage Ambulance and South Coast Perfusion.

UC San Diego Health was the first health system in the region to treat patients with COVID-19. As the region's only academic health system, UC San Diego Health cares for many of the region's sickest and fragile patients. The system is comprised of UC San Diego Medical Center in Hillcrest and Jacobs Medical Center, Sulpizio Cardiovascular Center, Moores Cancer Center, Shiley Eye Institute, and the Altman Clinical and Translational Research Institute, all in La Jolla, as well as primary care and same-day services at clinics throughout Southern California.

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