

Shock teams and ECMO save lives in massive STEMI

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The use of extracorporeal membrane oxygenation (ECMO), accompanied by mechanical CPR, in patients with massive myocardial infarctions can lead to unexpected survival. These study findings are being presented March 9 at the American College of Cardiology Scientific Sessions.

ECMO is an advanced technology that functions as a replacement for a critically ill patient's [heart](#) and lungs. This is the first report of combined ECMO, mechanical CPR and therapeutic hypothermia (TH) use within a STEMI Network.

"For many [patients](#) who present with a severe heart attack, or ST-elevation [myocardial infarction](#) (STEMI), complicated by cardiogenic shock that progresses to cardiac standstill, the result is almost uniformly fatal," says Michael R. Mooney, MD, a research cardiologist at the Minneapolis Heart Institute Foundation (MHIF) and a physician at the Minneapolis Heart Institute at Abbott Northwestern Hospital in Minneapolis. "This aggressive approach despite its complexity extends our ability to salvage the most devastating complication of acute MI."

The patients in this study were a consecutive series with STEMI meeting criteria for ECMO from August 2011 to October 2012. The Shock Team comprised of a perfusionist, an advanced [heart failure](#) cardiologist, an interventional cardiologist and a [cardiac surgeon](#) developed a protocol and a process for emergency ECMO (E-ECMO) in the CV lab. This same team was then used to implement E-ECMO.

The study included five patients (three males) with a median age of 64 years. The median time of cardiac arrest from the initiation of ECMO was 52 minutes, and ECMO was required for a median time of 4 days in these patients. After ECMO was initiated, therapeutic hypothermia was used in 4 of the cases. Mechanical CPR devices were used in all cases.

Of the five patients, four survived to [hospital discharge](#) and all of the survivors had "good neurologic recovery at discharge," Mooney reports. Of the four survivors, discharge [ejection fraction](#) improved from 0-10% to a median of 45%. Blood transfusions were required in all cases.

This group of patients account for nearly half of all deaths within a STEMI network and no effective treatment was previously available. "ECMO, along with mechanical CPR, and TH can provide survival in situations previously regarded as uniformly fatal. Therefore, ECMO may have a role in selected PCI centers with advanced specialized teams with the appropriate experience," stated Mooney.

Provided by Minneapolis Heart Institute Foundation

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