

Guidelines for extracorporeal cardiopulmonary resuscitation in children and adults: New ELSO statements

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Extracorporeal cardiopulmonary resuscitation (ECPR) is a potentially lifesaving treatment for patients in cardiac arrest when the circulation can't be restored by conventional CPR. New guidelines for ECPR in adults and children, developed by the Extracorporeal Life Support Organization (ELSO), are presented by the *ASAIO Journal*.

A specialized application of extracorporeal membrane oxygenation (ECMO), ECPR is increasingly being used to provide a chance for survival in patients with a broadening range of conditions. "This ELSO guideline is intended to be a practical guide to implementing ECPR and the early management following establishment of ECMO support," according to the interim guideline statement for ECPR in adults.

Alexander (Sacha) C. Richardson, BMBCh, MA, MRCP, FCICM, of The Alfred Hospital, Melbourne, Australia, is lead author of the adult guideline. Anne-Marie Guerguerian, MD, Ph.D., of the Hospital for Sick Children, Toronto, is lead author of the pediatric ECPR guideline.

New ELSO guidelines set standards for ECPR support

In ECPR, the patient's circulation and gas exchange are restored using ECMO in the context of cardiopulmonary resuscitation measures. ECPR is performed as an emergency measure in selected patients with potentially treatable causes of cardiac arrest, but who don't achieve

return of spontaneous circulation with conventional CPR.

"By providing organ perfusion, [ECPR] provides time for the delivery of interventions necessary to regain an adequate native circulation," Dr. Richardson and colleagues write. "ECPR is a time-sensitive, complex intervention that requires teamwork, clearly defined roles, and well-trained [health care providers](#)."

While the availability and use of ECPR have been increasing, evidence to guide practice in key areas is still limited. Topics addressed in the new ELSO guidelines include:

- Selection of patients who may benefit from ECPR, as well as the timing and location of this advanced life support technology
- Approaches to cannulation: placement of the lines through which the patient's blood will be routed out of the body through a vein, oxygenated outside the body, and returned through an artery (V-A ECMO)
- Connection and establishment of ECPR support, including steps for care management after cardiac arrest
- Initial care while the patient is on ECMO, including imaging studies to monitor the patient's condition and prepare for any necessary tests and treatment
- Weaning off ECMO: steps for removing the patient from extracorporeal life support and restoring natural circulation, if possible

The guidelines also address the process of developing an ECPR program, including resources, staff training and competency, and quality assurance. Use of ECPR also raises unique issues related to ethics and patient consent, as well as special considerations in patients with out-of-hospital [cardiac arrest](#).

Children undergoing ECPR differ from adults in several ways: because many children who need ECPR are already hospitalized for congenital heart disease surgery, ECPR access and restoration of circulation can often be achieved more rapidly. Children generally have better survival and short-term outcomes after ECPR. However, in children as in adults, there are limited data on long-term outcomes.

The two new ELSO statements were created by international, interdisciplinary teams. Recommendations are based on the best available research and on expert consensus where evidence is lacking, and will be updated as further evidence becomes available.

More information: "Extracorporeal Cardiopulmonary Resuscitation in Adults. Interim Guideline Consensus Statement From the Extracorporeal Life Support Organization."

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"Pediatric Extracorporeal Cardiopulmonary Resuscitation ELSO Guidelines."

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