

Trends in extracorporeal life support

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For critically ill patients with heart or lung failure that does not respond to conventional treatments, extracorporeal life support (ECLS) can provide a bridge to survival. Updated analysis of a worldwide database finds that ECLS technologies are becoming more widely available and more frequently used at centers around the world, according to a report in the *ASAIO Journal*.

The new update from the Extracorporeal Life Support Organization (ELSO) registry—the first since 2012—summarizes current data on ECLS submitted to the registry. Writing on behalf of the ELSO registry, Dr. Ravi Thiagarajan and colleagues state, "The ELSO registry has collected important information on ECLS use from centers worldwide and has helped understand ECLS utilization and outcomes."

Latest Data on ECLS—Use, Outcomes, and Complications

Extracorporeal [life support](#) refers to the use of extracorporeal membrane oxygenation (ECMO) and other techniques to provide blood circulation and oxygenation for certain groups of [critically ill patients](#). Like cardiopulmonary bypass during surgery, ECLS takes over the work of the heart and lung—but for a period of days or weeks, rather than just a few hours.

As of July, 2016, the ELSO registry included information on 78,397 infants, children, and adults receiving ELCS since 1989. In 2015, the last year of full data collection, ECLS was used in 7,901 patients at 310

centers worldwide. The report shows that ECLS is now being used more often in adults than in newborns with respiratory failure.

Overall, 70 percent of patients were successfully weaned off ECLS, while 58 percent survived to be discharged from the hospital. When ECLS was used for respiratory failure, the rate of survival to discharge in 74 percent for newborns (under 30 days) and 58 percent for older children and adults.

Newborns with respiratory failure remain the largest group of ECLS patients. However, the use of ECLS in this group of patients has decreased in recent years, while rates of survival to [hospital discharge](#) have decreased as well. These trends likely reflect advances in mechanical ventilation, resulting in a more critically ill group of infants being placed on ECLS.

Meanwhile, adults with respiratory failure are the fastest-growing group of ECLS patients. This trend may reflect the impact of the H1N1 influenza ("swine flu") epidemic, as well as a 2009 study (the [CESAR trial](#)) showing that ECMO improves survival in adults with severe [respiratory failure](#).

ECLS is also used in patients with various causes of cardiac failure—overall rates of survival to hospital discharge were 42 percent for newborns, 51 percent for older children, and 41 percent for adults. As surgery to correct congenital heart defects becomes increasingly complex, the use of ECLS for cardiac support in infants and children is expected to grow.

There is also a trend toward increased use of ECLS in patients who don't respond to cardiopulmonary resuscitation. Rates of survival to hospital discharge in these "ECPR" cases remain relatively low: 41 percent for infants and children and 29 percent for adults.

Although ECLS is potentially lifesaving, the patients who need it are severely ill, and remain at high risk of complications and death.

"Adverse events during the course of ECLS are common, and underscore the need for skilled ECLS management and appropriately trained ECLS personnel and teams," Dr. Thiagarajan and coauthors write.

Given the complexity of ECLS technologies and the critical illness of [patients](#) requiring this type of support, continuous [data collection](#) and analysis are essential to achieve continued progress in appropriate use and good clinical outcomes of ECLS. Dr. Thiagarajan and colleagues conclude, "The ELSO registry remains an important and valuable source of ECLS information that will continue to influence the use of ECLS."

More information: Ravi R. Thiagarajan et al. Extracorporeal Life Support Organization Registry International Report 2016, *ASAIO Journal* (2016). [DOI: 10.1097/MAT.0000000000000475](https://doi.org/10.1097/MAT.0000000000000475)

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