

## Pediatrics Summit 2018: Paediatric ECMO outcomes in a “low volume” centre - strategies to achieve good outcomes - Ajay Desai - Royal Brompton Hospital

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**Introduction:** Extracorporeal membrane oxygenation (ECMO) or extracorporeal life support (ECLS) is a treatment that utilizes an adjusted incomplete cardiopulmonary detour to give aspiratory as well as cardiovascular help for an all-encompassing period, for the most part one to about a month. It is utilized for patients with reversible cardiopulmonary disappointment because of aspiratory, cardiovascular, or different infections. ECMO gives time to a pneumonic as well as cardiovascular rest and for recuperation. Given that ECMO is obtrusive, it includes potential dangers, accordingly rules have been set up to choose patients with a 50-100% forecast of mortality. The perfect ECMO competitor has a high forecast of mortality, yet with a conceivably reversible pneumonic or cardiovascular ailment. Extracorporeal membrane oxygenation (ECMO) is getting progressively used to oversee neonates with cardiovascular and respiratory disappointment. The strategy includes broad anticoagulation in a wiped out neonate with fundamental infection pathology. What's more, the youthful hemostatic framework in the neonate adds to the unpredictability of titrating the essential anticoagulation. This places the baby at more serious hazard for perilous discharge and apoplexy. Overseeing anticoagulation in these babies is incredibly testing and needs the mastery of a doctor with an exhaustive information on the complexities of formative hemostasis and impediments of the present research facility strategies accessible to oversee anticoagulation.

Extracorporeal membrane oxygenation (ECMO) is a change of customary cardiopulmonary detour used to help heart and lungs for broadened timeframes till the hidden infection process is dealt with. Utilization of a semi penetrable film oxygenator to forestall direct contact of blood and gas, to drag out extracorporeal support is settled. Clinical reports of long haul membrane extracorporeal backing of patients with respiratory disappointment were depicted in the mid-1970s. ECMO as a treatment methodology in grown-up respiratory disappointment didn't increase all-inclusive prevalence because of no distinction in results when contrasted with customary ventilator the board. In a similar period, notwithstanding, neonates [especially those with diligent aspiratory hypertension of the infant (PPHN)] had improvement in results auxiliary to ECMO, albeit untimely children at under multi week's growth had an unsatisfactorily high rate of intracranial drain. From that point forward, ECMO as a salvage treatment methodology for babies more than 35 weeks growth and youngsters has developed and turn out to be progressively famous in concentrated consideration units (ICUs). Since 2009 there was episode of

H1N1 Influenza prompting extreme hypoxemic respiratory disappointment where ECMO innovation demonstrated promising outcome in improving mortality, prompting resurgence of utilization of ECMO both in grown-ups and Pediatric age gatherings. As of now ECMO is considered as a substantial other option if there is a disappointment of ordinary treatments.

**Background:** Currently the most widely recognized technique for mechanical circulatory help for pediatric patients is Extracorporeal Membrane Oxygenation (ECMO). As per ELSO rules, the cost adequacy of giving less than 6 cases for each year joined with the misfortune or absence of clinical aptitude ought to be considered when building up another ECMO program. "Low volume" ECMO programs (<20 cases/year) may require extra proceeding with instruction for all colleagues. Aim: As a tertiary pediatric cardiothoracic emergency unit a "low volume" ECMO focus, we report our neonatal and pediatric ECMO results and the means taken to guarantee conveyance of a high caliber and safe help regardless of generally low case volumes.

### Methods:

- Retrospective survey of sequential pediatric ECMO patients (Jan 2011 - June 2018).
- Review of our pediatric ECMO program – structure, administration, preparing, research and review and coordinated effort with local and National ECMO/transplant focuses.
- Survival was characterized as either endurance to 30-days present decannulation or on release from PICU to pediatric ward or provincial/national transplant communities for additional evaluation.

**Results:** During the seven-and-a-half-year time span a sum of 78 patients got ECMO support. Neonates (26); newborn children (32) and youngsters (20); age extend 1day-14 years. The quantity of patients accepting ECMO bolster expanded in beginning years and afterward levelled: 5(2011), 7(2012), 10(2013), 15(2014), 11(2015), 12(2016), 10(2017) and 8(2018). Demonstrative classifications included – post cardiectomy (47), other heart (25), respiratory (5) and sepsis (1). All got VA ECMO support. 14 out of 78 patients (18%) were moved to local/national transplant communities for transplant evaluation. 43/78 (55%) youngsters made due to PICU release.

ECPR: 35 patients (44%) got ECPR support. Middle (go) term of CPR was 46 min (28-120). Generally ECPR endurance rate was 51.5%.

Systems used to guarantee great ecmo results:

1. Updating the structure of the ECMO program in accordance with ELSO rules.
2. Ensuring satisfactory instruction and preparing for staff through -

Mandatory ECMO instructional classes with in-assembled multi-disciplinary high devotion ecmo re-enactment.

Bedside ECMO work understanding for staff in a joint effort with provincial ecmo focuses.

- a. Research and review.
- b. Decision creation in multi-disciplinary discussion.
- c. Collaboration with in house "high volume" grown-up ecmo program.
- d. Collaboration with local/national ECMO focuses staff preparing/exhortation/move.

**Conclusions:** Pediatric ECMO endurance result rates practically identical with ELSO information are attainable in a "low volume" ECMO focus. An organized ECMO program with great administration focussing on proceeding ECMO instruction and preparing, reviewing our clinical practice alongside close joint effort with provincial/National transplant communities is essential.