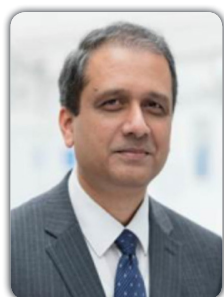


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Paediatric ECMO outcomes in a “low volume” centre—strategies to achieve good outcomes

Background: Currently the most common method of mechanical circulatory support for pediatric patients is Extracorporeal Membrane Oxygenation (ECMO). According to ELSO guidelines, the cost effectiveness of providing fewer than 6 cases per year combined with the loss or lack of clinical expertise should be taken into account when developing a new ECMO program. “Low volume” ECMO programs (<20 cases/year) may need additional continuing education for all team members.

Aim: As a tertiary paediatric cardiothoracic intensive care unit and a “low volume” ecmo centre, we report our neonatal and paediatric ecmo outcomes and the steps taken to ensure delivery of a high quality and safe service despite relatively low case volumes.

Methods:

- Retrospective review of consecutive paediatric ecmo patients (Jan 2011 - June 2018).
- Review of our paediatric ECMO programme – structure, governance, training, research and audit and collaboration with regional and National ECMO/transplant centres.
- Survival was defined as either survival to 30-days post decannulation or to discharge from PICU to paediatric ward or regional/national transplant centres for further assessment.

Results: During the seven-and-a-half-year period a total of 78 patients received ECMO support. Neonates (26); infants (32) and children (20); age range 1day-14 years. The number of patients receiving ECMO support increased in initial years and then plateaued: 5(2011), 7(2012), 10(2013), 15(2014), 11(2015), 12(2016), 10(2017) and 8(2018). Diagnostic categories included – post cardiectomy (47), other cardiac (25), respiratory (5) and sepsis (1). All received VA ECMO support. 14 out of 78 patients (18%) were transferred to regional/national transplant centres for transplant assessment. 43/78 (55%) children survived to PICU discharge.

ECPR: 35 patients (44%) received ECPR support. Median (range) duration of CPR was 46 min (28-120). Overall ECPR survival rate was 51.5%.

Strategies used to ensure good ecmo outcomes:

1. Updating the structure of the ECMO programme in line with ELSO guidelines.
2. Ensuring adequate education and training for staff through -
 - a. Mandatory ECMO training courses with in-built multi-disciplinary high fidelity ecmo simulation.
 - b. Bed-side ECMO work experience for staff in collaboration with regional ecmo centres.
3. Research and audit.
4. Decision making in multi-disciplinary forum.
5. Collaboration with in house “high volume” adult ecmo program.
6. Collaboration with regional/national ECMO centres—staff training/advice/transfer.

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Conclusions: Paediatric ECMO survival outcome rates comparable with ELSO data are achievable in a “low volume” ECMO centre. A structured ECMO programme with good governance focussing on continuing ECMO education and training, auditing our clinical practice along with close collaboration with regional/National transplant centres is vital.

Biography

Ajay Desai DCH, DNB(Paed), MRCPCH, FRCPCH is a consultant in paediatric intensive care medicine at Royal Brompton Hospital in London, United Kingdom. He is the lead for the paediatric Extracorporeal Membrane Oxygenation (ECMO) programme, with a special interest in Extracorporeal Cardiopulmonary Resuscitation (ECPR). He has completed his postgraduate paediatric training in Mumbai, India. He gained further experience in paediatric intensive care and paediatric cardiology in London tertiary centres prior to his appointment as a consultant in 2010. And he is the RCPCH College Tutor, and Co-Chair for Science and Education Committee in Paediatric Intensive Care Society UK. He is also a faculty member for the International Pediatric Simulation Society (IPSS) – Education Subgroup. And research interests are ECPR – Factors affecting morbidity and mortality. Impact of Down's syndrome status on early intensive care outcomes in children following Complete Atrioventricular Septal Defect (CAVSD) repair

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