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Severity of illness in the early pre-surgical management of congenital diaphragmatic hernia

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Congenital Diaphragmatic Hernia (CDH) continues to carry significant morbidity and mortality despite critical and surgical advances. It is estimated that only 60%-70% survive–usually in high-volume centers. Early pre-surgical management is often complicated by physiologic derangement secondary to varying degrees of lung hypoplasia, pulmonary hypertension and a need for inter-facility transport. Infants who fail to achieve adequate oxygenation and/or perfusion with maximum medical support are regularly supported by extracorporeal membrane oxygenation (ECMO), further complicating the hospital course. These aforementioned challenges have led to a large body of evidence, evaluating best practice outcomes; however, questions remain regarding the best practice approaches to early stabilization and patient selection for ECMO. We have previously reported that pre-transport blood gases, fluid boluses, and ventilation parameters were associated with outcome; however only SNAPP-II score was found to be independently associated with ECMO (OR 1.13 [1.04-1.24]: p=0.007) and mortality (OR 1.11 [1.05-1.12]: p<0.0001) in out-born infants with CDH. In a larger dataset, we demonstrated that SNAPP-II (AUC: 0.77 vs. 0.67) performs better in predicted mortality compared to $PaCO_2$ in the first 24 hours of life. Discussed will be the importance of severity of illness modeling in the CDH population, as it relates to stabilizing intervention and ECMO support. Current evidence concerning antenatal imaging of CDH and its relationship with severity of illness in the first 24 hours of life and outcome will be presented.

Biography

Bradley A Kuch is a graduate from Ohio University with a Master in Health Care Administration and Services and Transport Team at Children's Hospital of Pittsburgh of UPMC. His past roles included Neonatal/Pediatric Transport Therapist and ECMO Coordinator/Researcher in the Dept. of Pediatric Cardiothoracic Surgery. His current research interests include Pediatric Acute Lung Injury and Neonatal/Pediatric Severity of illness modeling during ECMO. His team's work "First 24-h SNAP-II score and Highest $PaCO_2$ predicts the need for ECMO in Congenital Diaphragmatic hernia" was published in the *Journal of Pediatric Surgery*.

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