

May, 2015

## Use of a scorecard to maintain excellent neonatal ECMO outcomes

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## Introduction

Today hospitals are measuring success based on quality of care provided. Many centers are utilizing surveys and patient satisfaction scores to determine quality. We are a smaller neonatal respiratory ECMO center that has 7-12 neonatal respiratory ECMO cases a year. We have developed a scorecard to compare our outcomes and complications to the US ELSO database.

## Methods

We utilized the ELSO registry data to extract annual data from 2010-2014 and compared our ECMO results to the ELSO registry. Only neonatal respiratory failure ECMO cases were included in this cohort. We examined cumulative survival, infection when on ECMO, intracranial hemorrhage detected on US or CT, circuit clots and air in the circuit. Local results were compared to the ELSO database with OpenEpi 3.03 using tests of binomial proportions.

## Results

- 39 neonatal respiratory ECMO patients comprised the cohort.
- The scorecard is represented in figure 1.
- Cumulative survival over those five years was 90%, while survival in the US ELSO registry data was 65% over that same time frame.
- We have outperformed the US outcomes data in all categories except air in the circuit.
- Root-cause analysis of all cases of air entrapment have found these were related to:
  - Our circuit setup
  - Use of new needleless access systems
  - Inappropriate access of the circuit.

We will continue to use this to improve on our outcomes.

Figure 1.

ECMO Quality Metrics 2010-2014						ECMO Quality Metrics vs ELSO		
	2010	2011	2012	2013	2014	Cumulative 2010-2014	ELSO Cumulative 2010-2014	ECMO Team Goal #
Neonatal ECMO patients (n)	9	8	5	8	9	39	3042	
Survival to discharge (%)	100	75	100	87.5	89	90	65	>68
Infection while on ECMO (%)	0	0	0	12.5	0	2.5	4.2	<3.8
Intracranial Hemorrhage (%)	0	0	0	12.5	11	5.1	12.2	<10.1
Circuit Clots (%)	33	25	60	25	44	35.8	43.8	<42.2
Circuit Air (%)	0	12.5	20	12.5	11	10	3.6	<3.4
ECMO Equipment Availability	89	100	100	100	100	97		100%
Efficient Head Ultrasound Performance (%)	89	100	100	100	100	97		100%
Utilizing Order Sets (%)	78	100	100	100	100	95		100%
Documentation of attending speaking with parents on a daily basis	33	100	80	74	95	74		100%
Length of ECMO (hours)	148	114	168	111	99	125	217.2	<200

## Conclusion

- When comparing our data on the scorecard we have excellent results compared to the US ELSO registry.
- We utilize the data from the scorecard to improve our management of ECMO patients.
  - The scorecard provides hospital administration with the quality of care we provide our ECMO population.
  - This assisted with obtaining and maintaining our Center of Excellence designation.

We can use this scorecard to continue to improve on our outcomes and delivery of medical services.