Implementation Of A Standardized Neonatal Cardiac Surgery Protocol Improves Postoperative Outcomes

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BACKGROUND

- Encouraged by a successful reduction in mortality after neonatal cardiac surgery, institutions including ours, fine tune the quality-of-care measure to improve outcomes.
- Here, we examined postoperative outcomes after implementing a standardized multidisciplinary strategy known as the ***Houston Neonatal Cardiac Surgery Protocol***

METHODS

Study: Single-Center, Retrospective analysis of prospectively collected data.

Inclusion: Neonates < 30 days of age with CPB

Protocol Goals were:

1) Surgical triage favoring complete repair & 2V physiology.
2) CPB optimization: physiologic prime, avoidance of deep hypothermia, full-flow bypass, aggressive ultrafiltration, myocardial protection ensured by transesophageal echo during all stages of CPB & CPB wean geared to maximize cardiac output.
3) Hemostasis: use of 7-0 sutures, high-dose antifibrinolytics, goal-directed control of hematocrit, fibrinogen, and platelets during CPB, and avoid factor concentrates.

Primary outcome

1) Post bypass vasoactive inotropic scores (**VIS**)
2) Lactate levels

RESULTS

- Baseline characteristics and discharge mortality were similar in groups *BEFORE* and *AFTER* protocol implementation.
- In the ***AFTER*** group, although bypass times were longer, the postoperative profile showed lower lactate, reduced need for inotropic support, improved cardiac function, and overall improved postoperative outcomes.

CONCLUSION

Implementation of a standardized neonatal cardiac surgery protocol was associated with favorable postoperative outcomes.

Neonatal Cardiac Surgery Protocol

- ***Surgical Planning***
  - *Favoring 2 Ventricle physiology*
  - *Complete repair*
- ***CPB Optimization***
  - *Physiologic bypass prime*
  - *Guaranteed myocardial protection*
  - *Maximal allowable bypass flows*
- ***Rapid Hemostasis***
  - *High dose fibrinolytics*
  - *Goal directed coagulation management on bypass*

Was Associated With Favorable Postoperative Outcomes

UTHealth McGovern Medical School
The University of Texas Health Science Center at Houston

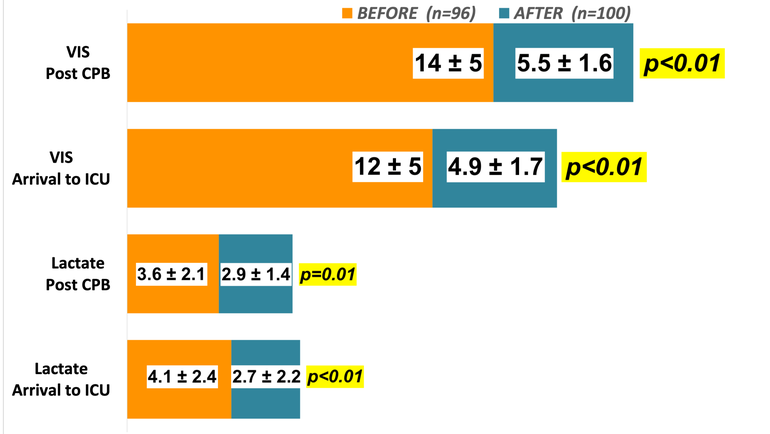
ACC.21

Children's Memorial Hermann Hospital

CHARTS

Demographics and Operative Variables	*BEFORE* (n=96)	AFTER (n=100)	*p*-value
Age (days)	10 ± 6	8 ± 7	0.14
Weight (kg)	3.2 ± 0.5	3.1 ± 0.5	0.12
Prematurity	18 (19%)	29 (29%)	0.09
Preop cyanosis or mixing lesion	76 (79%)	73 (73%)	0.31
Cardiopulmonary bypass time (mins)	124 ± 37	182 ± 91	<0.01

Primary Outcomes: Vasoactive Inotrope Scores and Lactate levels



Secondary Outcomes	*BEFORE* (n=96)	AFTER (n=100)	*p*-value
	(n,%)	(n,%)	
Post CPB Transfusion (mL/Kg)	89 ± 64	63 ± 56	0.003
Use Of Factor Concentrates	91 (94%)	2 (2%)	<0.01
Ventricular Arrhythmias With Ventricular Dysfunction	7 (7.3%)	0	0.006
Arrhythmias Requiring Drug Therapy	27 (28%)	13 (13%)	0.009
Mechanical Ventilation > 7 Days postop	18 (19%)	6 (6%)	0.006
Unplanned Non-cardiac Intervention	40 (42%)	11 (11%)	<0.01
Unplanned Interventional Cardiac Cath	11 (12%)	5 (5%)	0.09
Unplanned Cardiac Re-operation	10 (10%)	10 (10%)	0.92
Mortality	5 (5.2%)	6 (6.1%)	0.79

DISCLOSURES

All Authors- None

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