Leveraging Neonatology Consults in the Pediatric Cardiac ICU: A Case Study

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Background

- Neonatology consults are standard in many centers for newborns in the pediatric cardiac ICU.
- No framework or directives for structuring these programs currently exist, and models may range from minimal involvement to intensive integration.
- Prior to 2025, Washington University neonatologists' consultation services in the cardiac ICU were often limited to initial consults and occasional urgent questions. There was also substantial provider-dependent variability as to whether consultation was requested.

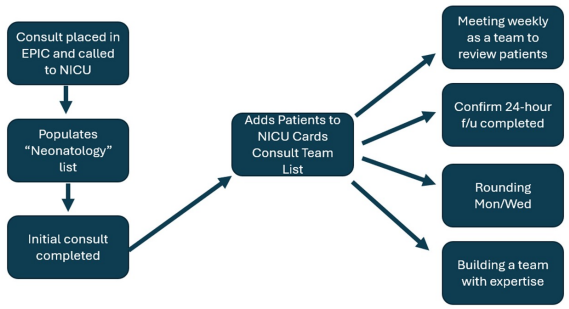
New NICU Consult Model

Recognizing a need for greater consistency and longitudinal follow-up, the NICU consulting service updated their model to include:

- A dedicated team of 6 neonatologists.
- First follow-up within 24 hours of initial consult order.
- Scheduled rounding/check-ins in the Heart Center on Mondays and Wednesdays.
- Inclusion of consult order in Heart Center ICU admission EPIC order set to prompt consultation on all newborn admissions.

This new model went into effect July 7, 2025.

Updated Neonatology Consult Process



Method

This case study illustrates the impact of this updated process in the management of a newborn admitted to the CICU in cardiogenic shock of unknown etiology requiring VA-ECMO support.

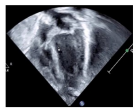
Patient Presentation

- 5-day-old term infant presented to the emergency department with hypothermia, somnolence, agonal breathing, and weak pulses. She was intubated. Umbilical venous and arterial access was obtained.
- ECHO demonstrated severe left ventricular dysfunction. Transferred to the CICU.
- On arrival, she was cannulated onto veno-arterial extracorporeal membrane oxygenation (VA-ECMO).
- Consult to neonatology order placed on admission using admission order set. Initial NICU consultation performed within 17 hours of admission.
- NICU recommendations included mechanical ventilation strategies, consideration of metabolic disorders and TORCH infections, UVC/UAC maintenance, and newborn health maintenance.
- ECHO demonstrated structurally normal heart.
- Sepsis work-up was negative.
- CRRT initiated for the following labs:

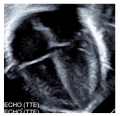
Ammonia	Glutamine	Argininosuccinic Acid
447 mcmol/L	5450 mcmol/L	762 mcmol/L

- Treated with ammonul infusion, arginine infusion, and levocarnitine with improvement in glutamine and ammonia.
- Decannulated from ECMO on LOS Day #3. Weaned off vasoactive infusions.
- Follow-up ECHO on LOS Day #4 demonstrated normal function.

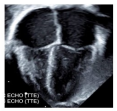
Case Conclusion



Echo from admission
LV SF (M-mode): 26 %



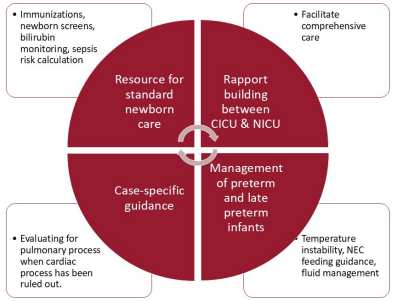
Echo from LOS Day #4
LV SF (M-mode): 45 %



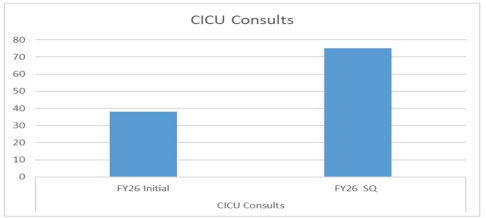
Echo from LOS Day #7
LV SF (M-mode): 33 %

- NICU consult service facilitated transfer to NICU on LOS Day #4 for further management of arginosuccinate lyase deficiency.
- Discharged home with normal neurological exam after 48 days in hospital.

Feedback from CICU Attending Physicians



NICU Consult Data



Initial Consults and Follow-Up Neonatology Consults for Patients in the CICU- Fiscal Year 26

Conclusion and Future Plans

Future plans:

- Creation of a reciprocal CICU consultation service to assist in management of patients with congenital heart disease admitted to the NICU.
- Presentation of a neonatal-specific ventilation educational series.
- Development of fellow trainee education and rotation opportunity.
- Designation of a golden hour admission process from delivery room to CICU for infants with highest risk of acute decompensation.

The Heart Center
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