





SEVERE THROMBOCYTOPENIA in combined therapy: ECMO with CONTINUOUS RENAL REPLACEMENT THERAPY

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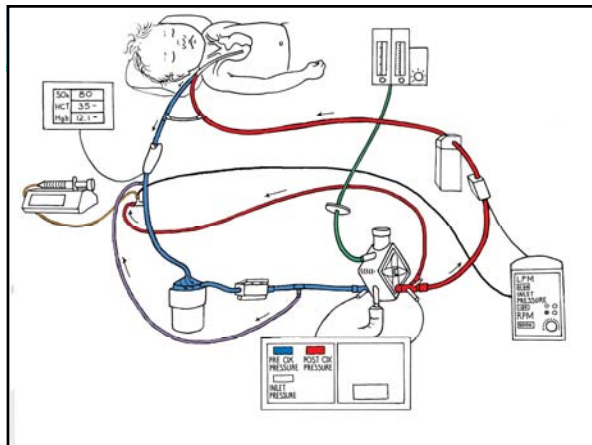


ECMO

- ECMO is defined as the use of a cardiopulmonary bypass circuit for temporary life support for patients with potentially reversible cardiac and/or respiratory failure
- ECMO provides a mechanism for gas exchange as well as cardiac support; thereby allowing for recovery from existing lung and/or cardiac disease

ELSO Guidelines for ECMO Centers, February 2010.

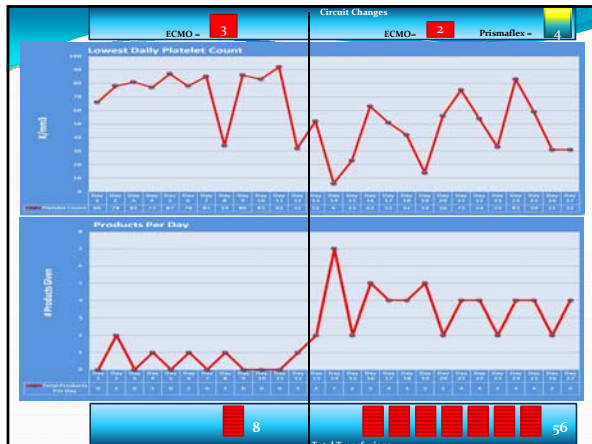


CONTINUOUS RENAL REPLACEMENT THERAPY (CRRT)

- Traditional intermittent hemodialysis often causes hemodynamic instability in the critically ill
- Patients receiving ECMO often need renal replacement therapy for any of the following reasons
 - Hypovolemia/ fluid overload
 - Electrolyte imbalances/toxin removal
 - Nutritional support

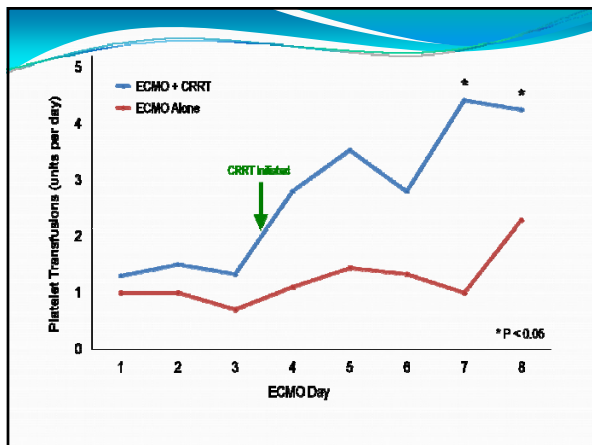
Initial Observation

- Observed a possible trend for increased platelet transfusion with CRRT & ECMO
- **Case Study:**
 - Term neonate with severe cardiopulmonary compromise
 - Possible terminal meconium with potential Group B Streptococcal pneumonia & septic shock.
 - Day 13 of ECMO: patient develops acute renal failure & CRRT begins



Widened Study Population

- We performed a 2-year retrospective study of infants less than 12 months of age receiving ECMO and CRRT.
 - 18 infants
 - Median age 19 days
 - Median weight 3.6kg
 - Median duration of ECMO before CRRT 4 days (0-16 days)
 - Median time of combined therapy (ECMO & CRRT) 7.5 days (2-22 days)



CONCLUSION

- The concomitant use of CRRT during ECMO appears to be associated with increased platelet consumption, which may alter the risk/benefit profile of combined therapy

DISCUSSION POINTS

- Increased platelet consumption occurred after initiation of CRRT. What is the mechanism of the observed consumptive process?
- Additional studies are needed to elucidate the mechanism of CRRT induced-thrombocytopenia in infants receiving ECLS.
- Other possible factors that may influence thrombocytopenia
 - CRRT filter size
 - RPM for ECMO flow
 - Cannula size

Now

- Funding has been assigned to research the mechanism behind this.
 - -Case control study looking at CRRT in infants with and without ECMO.
- Smaller CRRT filters are being used for neonates on ECMO that require renal support.

