

# Circuit to Circuit Blood Priming in Patient's Requiring Kidney Support Therapy (KST) with the Cardio-Renal PEdiatric Dialysis Emergency Machine (CARPEdiEM™)

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## Purpose

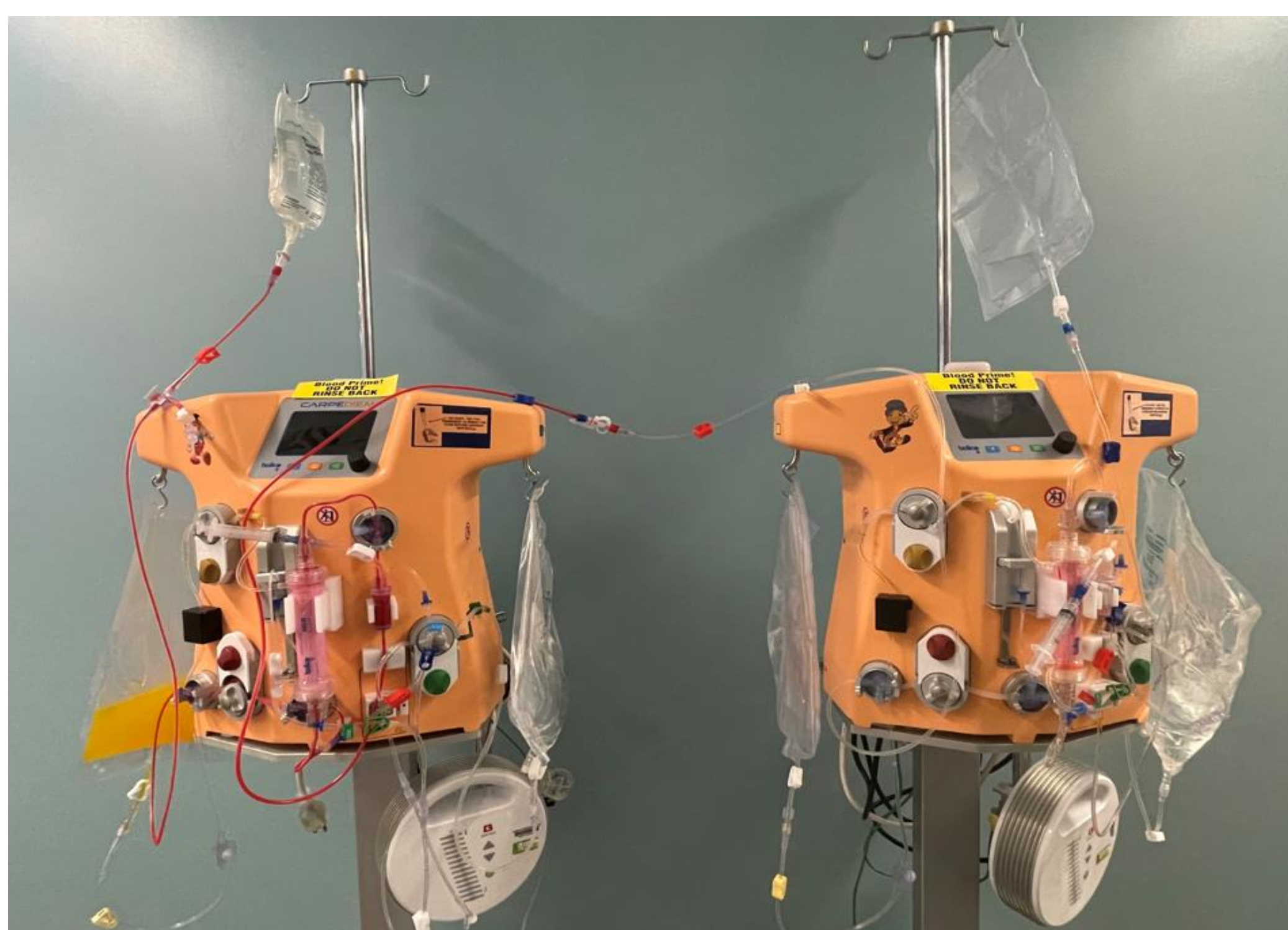
- The Carpediem™ (CD) is a dedicated infant dialysis device that offers small extracorporeal circuit volumes (ECV) decreasing the need for blood priming
- Although the smallest CD filter available in the US (HCD 015) has an ECV of 32 mL, infants <4 kg may still require a circuit blood prime
- To mitigate individual PRBC unit exposure to infants with filter changes, we describe an *in vitro* simulation trial of circuit-to-circuit blood priming



## Methods

Filter Description	Filter Surface Area (m <sup>2</sup> )	ECV (mL)	Patient Size (kg) Requiring Blood Prime
HCD 015	0.16	32	< 4
HCD 025	0.29	41	< 5

- This *in vitro* trial was initially performed with two CD machines, using two identical CD filters
- A second trial was completed using a HCD 015 filter (ECV 32 mL) and a HCD 025 filter (ECV 41 mL)
- The machines were first primed with PlasmaLyte™, and subsequently with PRBCs
- Following the blood prime of the 1st circuit, subsequent circuits were primed with the blood contained in the preceding circuit



## Methods: How to Perform

Step	CARPEdiEM™ (CD1)	CARPEdiEM™ (CD2)
1	End treatment and navigate to end screen to begin new therapy	Prime with Plasmalyte™, clamp arterial/ venous lines, remove Plasmalyte™ and prime waste bag from scale; navigate to initiation screen
2	Clamp and disconnect arterial/ venous lines from patient, open blood pump door and remove venous line from clamp	
3	Connect arterial line to adapter spike, spike a bag of NS and hang above the machine	
4	Connect venous line to female adapter	Connect arterial line to open end of the female adapter
5		Connect venous line to an empty waste bag, hang on side of machine
6	Unclamp all lines	Unclamp all lines
7		Start blood flow at 30 mL/min to initiate prime, press "Stop" when prime complete
8	Clamp all lines	Clamp all lines
9	Turn machine off, dispose of used circuit	Immediately, prepare to connect to patient

## Summary

- Blood was successfully transferred from one machine to another without triggering circuit pressure alarms
- Opening the blood pump and removing the venous line from the venous clamp negates alarms that occur when two machines have competing pressures
- Each procedure was completed in its entirety within 3 minutes

## Conclusion

- Using this technique to circuit prime minimizes the risks associated with blood product exposure and potential sensitization in a patient that may require future transplantation
- It also helps to alleviate time off therapy that may result from blood product preparation time
- When performing a circuit to circuit prime, considerations include the differences in ECVs