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Infant Hemodialysis: A Performance Improvement Project

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One of the greatest challenges with Pediatric Nephrology is management of infants with kidney failure. Renal replacement therapies for infants < 10 kg are limited, because indications of renal replacement therapies are geared towards children > 10kg based on the manufacturing guidelines and compatibilities of dialysis supplies, and it is difficult to dialyze infants less than 10 kg due to the patients' size and largely due to technical issues such as difficult vascular accesses and difficulty to manage precise ultrafiltration. Peritoneal Dialysis (PD) is the primary choice of renal replacement therapy for this population. Complication can occur with infants' on peritoneal dialysis such as peritonitis and thus, indicate the time and need for Hemodialysis (HD) treatment. The need for change is to be able to have exclusive and supportive data which indicates, infant hemodialysis is possible. This case study presents a 2.5 year-old, 10 kg male who requires daily hemodialysis as an only option when his Peritoneal Dialysis catheter was removed due to fungal peritonitis and bowel perforation.

There are little to no evidence in literature that addresses the systems and equipment/supplies that are available for children <10 kg requiring hemodialysis. The team resourced other pediatric dialysis centers via ListServs and email's all over the country to determine what equipment and technology was available for this population. Manufacturer literature was used to determine smallest dialyzer and blood circuit tubing available.

The collaborative expertise of the pediatric nephrologist, program coordinator, supervisor, and dialysis nurse were contributing factors in developing a plan of care. The patient in this case study was able to successfully receive daily hemodialysis for 90 days in the hospital and receive a successful living-related kidney transplant 3 months later. As a result, we have established hemodialysis guidelines based on patient size and can customize equipment and supplies available to provide quality care for this unique population. This project demonstrated that using the smallest dialyzer and tubing available today achieved good outcomes.

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