

Implementation of a Novel Renal Therapy in the Neonatal/Infant and Cardiac Intensive Care Units:

Rapid Results from a Multimodal Educational Approach

AKI & CRRT Conference



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Background

- A novel vascular renal replacement therapy, **Aquadex™**, was scheduled for implementation in the Neonatal/Infant Intensive Care Unit (N/IICU) to support patients not eligible for conventional hemodialysis due to their small physical size.



- Training of nurses needed to progress quickly but achieve high fidelity, since a vascular approach would not only be new, but also complex and associated with multiple potential safety risks.
- After implementation led to sustained practice in the N/IICU, the Cardiac Intensive Care Unit requested the support of this therapy. Competent N/IICU staff resourced these circuits while N/IICU content experts shared education methodology.

Introduction

"Kidney replacement therapy (KRT) in neonates has been challenging due to a lack of technology for small patients. Programs that provide acute KRT in neonate must have a sound infrastructure" (Harper et.al., 2021).

"Each multidisciplinary program must have outlined policies and procedures, clearly defined roles and responsibilities for all team members (physician, nurses, advanced practice providers, clinical nurse specialists, pharmacists, and dieticians), assure adequate training, develop procedure checklists, institute timeouts prior to initiation, and perform continuous quality improvement assessments" (Harper, et.al. 2021).

It is imperative that the team has the necessary skills and equipment to support therapy as well as dedicated time to develop educational materials to train both the ordering physicians as well as the nurses initiating and maintaining the therapy. Educational efforts were based upon this framework.

Initial Training Year	RNs Trained	Maintained Competency
2019	25	19
2020	26	15
2021	2	2
2022	7	5
2023	5	5
Total	65	46

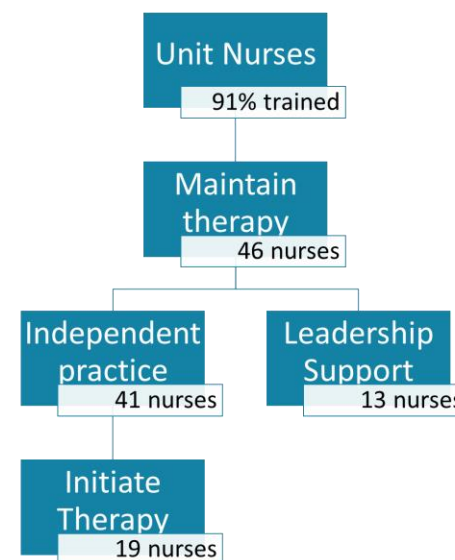
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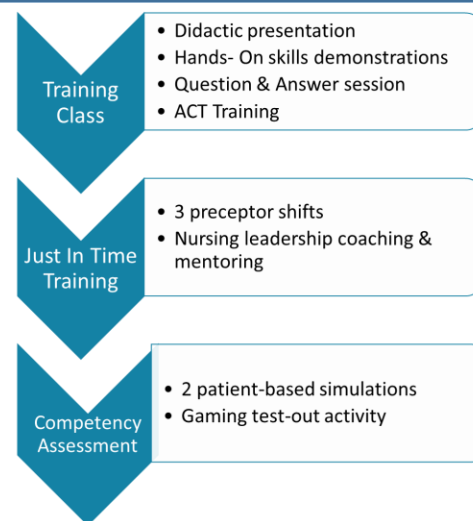
Results



Based on the above training efforts, this unit was able to support the following population who received Aquadex™ therapy at CHOP.

- 14 total patients
- Diagnoses encompassed a range of congenital renal and/or genitourinary anomalies, and acute kidney injury
- Gestational age at initiation ranged from **23 3/7 weeks -- 37 4/7 weeks**
- Patient weights at initiation ranged from **1.3 -- 6 kg**
- Duration of therapy ranged from **5 days -- 137 days**

Competency Maintenance



- To maintain competency after initial training:**
- Online learning modules every 6 months
 - Water drills every 6 months
 - Annual "bootcamp" which includes 2 case-based simulations
 - ACT annual sign-off

Next Steps

- Onboarding 22 more Aquadex™ trained nurses in March 2023
- Neonatologists are interested in utilizing Aquadex™ in tandem with ECMO therapy

Conclusions

- Rapid clinical change and leading through change poses challenges for nurse education when complex new procedures or treatment-eligible populations are introduced partnered with hesitant and resistant staff.
- Standard 2:1 staffing model
- Continuing education, coaching and unwavering leadership support are essential.
- A multimodal education approach enabled us to meet the challenge, ensuring safe care for an extremely fragile population, and the successful implementation of a novel therapy.



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