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Increasing Point-of-Care Nursing Competency by utilizing Bedside Ultrasound for the Assessment and Cannulation of Hemodialysis Vascular Access

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Background: Nurses working in the hemodialysis unit come from various clinical backgrounds. Vascular access skillset are of concern to Hemodialysis patients and nurses. Nurses who work in Hemodialysis demonstrate different levels of competencies, knowledge and skills based on their clinical experiences. Their diversity of knowledge and unique practical experiences also renders inconsistency in how certain skills are performed, specifically cannulation of arteriovenous fistula (AVF)/graft (AVG). Recently, patients were observed refusing to be cannulated as a result of traumatic and painful cannulation experiences. Our In-Center Hemodialysis (ICHHD) program currently provides care for 415 patients. Among this, 64.82% of patients have central venous catheters (CVC), 27.23% AVF/AVG and 7.95% patients with dual vascular accesses. There has been an increase in CVC due to patients expressing fear of painful cannulation. From our ICHD there have been an increase in the number of radiological procedures such as angioplasty, thrombolysis, angiogram procedures and surgical revision for failed AVF/AVG.

Purpose: The goal of this project is to build capacity with our Point-of-Care nurses to be able to utilize portable ultrasound guided cannulation in efforts to minimize hemodialysis vascular access complications secondary to traumatic cannulations and to reduce vascular access radiological and surgical interventions.

Method: The differing body of knowledge, skillset and experiences among the hemodialysis nurses' are reflected in the inconsistencies of cannulating practices. A preliminary survey to assess nurses competency in cannulation was disseminated. To minimize gaps with inconsistent practices and assess nurse's competency, an educational rollout consisting of an in class component, team huddles, and practical hands on training using a phantom model was designed on ultrasound guided cannulation to improve hand eye coordination. The visual, auditory, kinesthetic (VAK) tool and vascular access practice validation questionnaire was utilized to identify different learning styles to inform the education and training. 50 trained nurses were validated independently using the bedside portable ultrasound to evaluate cannulation technique.

Evaluation: With the interventions described above, the goal was to improve the level of competency with ultrasound guided cannulation and minimize painful cannulation experiences for our hemodialysis patients. Post intervention survey was provided to the nurses to assess competency in performing ultrasound guided cannulation. In addition to the written evaluation, the clinical practice leader

conducted one of one observation of trained nurses performing the procedure and provided immediate feedback to improve technique and success rate.

References

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