Self-cannulation: enabling patients’ independence

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Abstract

Home hemodialysis was a modality of necessity in the early days of chronic renal replacement therapies. Patients had to be independent for all aspects of their care including self-cannulation of the hemodialysis needles. As the number of in-center staff provided hemodialysis centers has grown, the level of independence for hemodialysis patients has drastically decreased. Recent changes by the United States Centers for Medicare and Medicaid Services in the ‘Conditions of Coverage for ESRD’ encourages all US dialysis facilities to offer and allow patients to perform their own needle cannulation. This article briefly reviews the advantages and disadvantages of patient self-cannulation. Self-cannulation can be a stepping stone to patient independence including home hemodialysis modality.

Keywords: home hemodialysis; self-cannulation; self-cannulation advantages; self-cannulation disadvantages; self-care hemodialysis

In the late 1960s, home hemodialysis was often not selected as a modality choice but as a necessity for many end-stage renal disease (ESRD) patients. Limited hemodialysis machines, limited trained staff and large travel distances to dialysis centers created the need for patients to be trained to perform their own dialysis at home. Patients and their families were trained in all aspects of hemodialysis including arterio-venous fistula (AVF) cannulation. The ideal person to perform the cannulation is the patient since they will always be present for the hemodialysis session. This remains true today for home or in-center hemodialysis patients.

The United States Center for Medicare and Medicaid Services updated the ‘Conditions for Coverage for ESRD Facilities’ in 2008. The regulations are broken down into specific areas by ‘V code’. Table 1 contains the specific wording, which includes self-cannulation as part of self-care training should a patient desire to learn.

The goal of this clear wording in the Interpretive Guidance document is to encourage dialysis facilities to allow patients to perform self-cannulation. This change in mindset is partially a result of the Centers for Medicare and Medicaid Services (CMS) Fistula First Breakthrough Initiative (FFBI) [1]. Patients performing self-cannulation are actively involved in their care and can help preserve their own vascular access site. The FFBI was based on the NKF KDOQI Vascular Access Guidelines [2]. Cannulation clinical studies are greatly lacking in the nephrology literature and thus the cannulation recommendations are mainly based on option and clinical expertise. Table 2 highlights the advantages and disadvantages of staff cannulation and patient self-cannulation.

### Table 1. US Medicare/Medicaid regulations regarding home dialysis training, 2008

| Tag number | Regulation (law passed by the US Congress) | Interpretive guidance (guidance provided to the state inspectors on how to evaluate compliance with the regulation) |
|------------|-------------------------------------------|--------------------------------------------------------------------------------------------------|
| V582       | (a) Standard: training. The interdisciplinary team must oversee training of the home dialysis patient, the designated caregiver or self-dialysis patient before the initiation of home dialysis or self-dialysis (as defined in § 494.10) and when the home dialysis caregiver or home dialysis modality changes. | A certified dialysis facility approved for outpatient maintenance dialysis services needs no additional certification or approval to provide in-center self-dialysis or to teach an in-center patient to perform all or part of their dialysis treatment (e.g. self-cannulate, monitor blood pressure). If a patient expresses the desire to perform self-dialysis in-center, the facility interdisciplinary team’s response should incorporate assessment of that patient for self-care training and planning for the goal of self-care as appropriate. Refer to V512 under patient assessment. Any patient who performs aspects of self-dialysis care must be trained and verified as competent prior to independently performing any part of his/her care. |
Richard and Engebretson [3] conducted in-depth interviews with 14 hemodialysis patients who currently had an AVF, had a history of an AVF or were scheduled for AVF creation. The goal of the research was to examine how patients negotiate living with an AVF. The interviews revealed that the patients feel dependent on the dialysis care team and thus vulnerable to the care team’s skill level, knowledge base and actions. This can lead to mistrust and fear. The patients become vigilant and assertive to protect their lifelines.

Self-care is a key component to the patients overcoming the dependency and the related vulnerability created by the routines in a typical outpatient dialysis unit. Cate Lewis RN, BSN, CNN is a nephrology nurse and former hemodialysis patient. She shares her personal story in a book chapter entitled ‘Dynamic Duo: The Chairside Perspective of Buttonhole Method and Self-Cannulation’ [4]. She points out that even the words used to describe needle insertion are fearful to the patients. The care team uses words like ‘stick’, ‘needle’ or ‘needling’. Cate supports use of ‘insert’ or ‘place’ the needles.

Techniques for training patients to do their own self-cannulation have been used for years. In the absence of clinical research to demonstrate the best training technique for self-cannulation, we can only look to methods described in clinical use. The method of ‘Tandem Hand’ cannulation [5] is detailed in the article by Stuart Mott and Harold Moore. Both work in the nephrology program at the University of Missouri, MO under the mentorship of the Buttonhole Cannulation Method founder Dr ZJ Twardowski.

Like all areas of cannulation, clinical research is required to advance the practice and provide the highest level of care with the best possible clinical outcomes. But we as nephrology care team providers cannot wait until the research is completed. I have been in nephrology for 28 years and I still await a randomized controlled trial that would meet the level of evidence criteria required to be used as evidence in future KDOQI Vascular Access Guideline updates. Personally, I think we need to return to the older practice of teaching and empowering the patients to learn self-care to the level of their ability and desire. I believe for many of our patients, this level of independence will include self-cannulation. Once we help them over the hurdle of self-cannulation, many can easily advance to home dialysis.

Conflict of interest statement. None declared.

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