

# Chapter 15

## Unplanned Start of Hemodialysis and Transition to Community

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### Introduction

Advances in medicine have helped fight disease allowing people to live longer, albeit with a myriad of chronic medical conditions. There is no universally accepted definition of “elderly, old, or older” person, but the generally accepted age range for this cohort is over 65 years. Those over the age of 80 years are considered “very-elderly.”

There has been a surge in the number of older patients with end-stage renal disease starting dialysis therapies in the recent years. According to the recent 2012 USRDS report, patients in the 75 years and older age group was the fastest growing cohort of ESRD patients followed by those between 65 and 74 years of age [1]. Elderly dialysis patients also have poor survival – a mean survival of 24.9 months in those between 65 and 79 years, progressively decreasing with increasing age, to 8.4 months in those over 90 [2].

The USRDS data is also very revealing in that the majority of ESRD patients are not receiving optimal pre-ESRD care. This results in a disproportionate number of patients starting hemodialysis (HD) with a catheter [1].

There is limited published literature pertaining to unplanned dialysis initiation and its outcomes, and only a handful of publications are specific to the elderly population. As a result, general observations made from these studies are often extrapolated to the elderly patient cohort.

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## What Is “Unplanned Start” of Dialysis? Defining the Terminology

Review of literature suggests that there has been much variability in the definition of “unplanned dialysis.” In general, dialysis is considered “planned,” when it is initiated in a scheduled, outpatient setting with the use of a permanent vascular or peritoneal access. On the other hand, any unscheduled initiation of dialysis with or without the use of a permanent access is considered “unplanned.” Most patients initiating dialysis in an unplanned setting are started on HD with a central venous catheter (CVC), as it is the “path of least resistance.”

The lack of consistency and uniformity in the terminology and definition of “unplanned dialysis” can make data gathering across studies challenging, which in turn makes deduction of outcomes difficult and unreliable. As a result, an alternative term, “suboptimal initiation” was proposed to define this better and recommended including those patients that initiate dialysis (a) in the hospital or (b) with a central venous catheter or (c) not on the chronic dialysis modality of their choice. Creating a broader awareness for the consistent use of this term is recommended to help with standardization and for research purposes.

The rate of suboptimal dialysis initiation has ranged from 24 to 49 % in different studies [3] and has been noted to be a problem in patients with and without pre-ESRD nephrology care.

## Causes of Suboptimal Dialysis Initiation

Several reasons have been cited in the literature as being responsible for suboptimal dialysis initiation, including late referral to nephrology (defined as nephrology care <1 year prior to initiation of dialysis) or difficulties in accessing nephrology care due to insurance or financial reasons, acute or chronic kidney disease, patient-related issues such as being in denial/refusing referral to education for RRT, and lack of proper surgical resources for establishment of a permanent dialysis access (Table 15.1).

**Table 15.1** Causes of suboptimal initiation of dialysis

1. Late referral to nephrology/difficulty accessing nephrology/specialty care due to insurance or financial reasons
2. Acute on chronic kidney disease
3. Patient-related issues such as being in denial/refusing referral for education and preparation for RRT
4. Lack of proper surgical resources for establishment of a permanent dialysis access, such as difficulty with referral, insufficient surgical expertise

While one may assume that early referral to nephrology would prevent suboptimal dialysis initiation, data suggest otherwise [1].

Suboptimal dialysis initiation is a significant problem in patients with and without pre-ESRD nephrology care with the majority of incident ESRD patients starting dialysis “suboptimally,” utilizing a central venous catheter (CVC). Furthermore, these patients were noted to have a higher mortality rate in the first 6 months of dialysis initiation, and any benefit conferred by early nephrology referral was viti-ated by suboptimal dialysis initiation [4].

Studies investigating the factors associated with suboptimal initiation in patients referred to nephrology prior to their dialysis start found that acute on chronic kidney disease, patient-related delays, delays attributed to renal service (relating to timely referral for modality education, access creation), and surgical delays were some of the common causes of suboptimal dialysis initiation (Table 15.2) [5, 6]. Also, the risk of suboptimal initiation increased by 4 % with each one-year increment in age [5].

### Outcomes of Suboptimal Dialysis Initiation

Suboptimal dialysis initiation has been associated with poor outcomes with increased morbidity and mortality, higher rates of hospitalization/associated costs with increased economic burden to the healthcare system, increased use of CVCs (associated with higher rates of infection and attendant complications), and a negative impact on the patients’ ability to choose a modality of their choice (Table 15.3).

**Table 15.2** Causes of suboptimal initiation in patients with pre-ESRD nephrology care >12 months

1. Patient-related
2. Acute on chronic kidney disease
3. Surgical delays
4. Late decision-making by the nephrologist

**Table 15.3** Outcomes of suboptimal dialysis initiation

1. Higher mortality
2. Higher rates of hospitalization, blood transfusions
3. Worse metabolic profile
4. Higher costs to healthcare system
5. Lower quality of life
6. Increased use of central venous catheters and higher rate of infections
7. Inability to initiate with dialysis modality of choice

## ***Mortality and Hospitalization Outcomes***

Unplanned start leads to an increased risk of mortality as well as higher rates of blood transfusion and subsequent hospitalization, when compared to those that started electively [4, 7–10]. For patients over 75 years of age, late referral and unprepared access were noted to confer higher mortality risk than mortality related to 5-year age increments [8].

## ***Economic Outcomes***

Suboptimal dialysis initiation is also associated with increased economic burden, with studies noting severalfold increased per-patient cost for suboptimal initiation compared to optimal initiation. This was mainly attributed to the need for hospitalization and the need for higher number of in-hospital dialysis sessions [9, 11].

## ***Quality of Life Outcomes***

The manner of dialysis initiation may have a bearing on the quality of life (QoL). Planned dialysis initiation may be associated with better QoL independent of comorbidities, suggesting that the QoL benefit may not be due to selection bias [12]. Similar findings were noted in another study involving elderly incident ESRD patients (>70 years old). Those with suboptimal dialysis initiation had a lower QoL, higher rate of pulmonary and peripheral edema, digestive disorders, and anorexia, as well as significantly lower levels of sodium and hematocrit compared to those with optimal initiation. Furthermore, QoL in ESRD patients undergoing optimal dialysis initiation was similar to controls without chronic kidney disease [13].

## **Strategies to Prevent Suboptimal Initiation**

Prevention of suboptimal dialysis initiation entails addressing and resolving the underlying factors that are responsible for this problem. Late referral to a nephrologist is one of the factors associated with suboptimal initiation as previously discussed, and this has been associated with poor outcomes. This problem can be addressed by increasing awareness and educating the primary care providers (PCPs) about the adverse socioeconomic, mortality/morbidity, and QOL outcomes associated with late referral and suboptimal initiation. Providing information and tools to primary care providers to identify patients with kidney disease who are potentially headed towards dialysis can decrease the number of late referrals. This is very

important as PCPs are usually the first line of contact for patients with kidney disease. A timely referral by the PCPs will allow for provision of effective pre-dialysis education, so that the patient can make an informed choice about the modality, plan for it accordingly, and avoid suboptimal dialysis initiation.

The advent of chronic kidney disease (CKD) guidelines by work groups such as KDOQI (Kidney Disease Outcomes Quality Initiative) and KDIGO (Kidney Disease Improving Global Outcomes) [14] has improved awareness regarding the criteria for referral to a nephrologist. Nephrology referral is warranted when the estimated glomerular filtration rate (eGFR) drops below 30 ml/min or in cases of rapid progression of CKD (decline in eGFR of more than 5 ml/min/1.73 m<sup>2</sup>/year). Once a patient is referred to the nephrologist, a multidisciplinary team care approach (involving the nephrologist, dietitian, social worker, pharmacist, and a CKD educator with a thorough knowledge of management of CKD-ESRD and its complications) seems to lead to improved overall patient care.

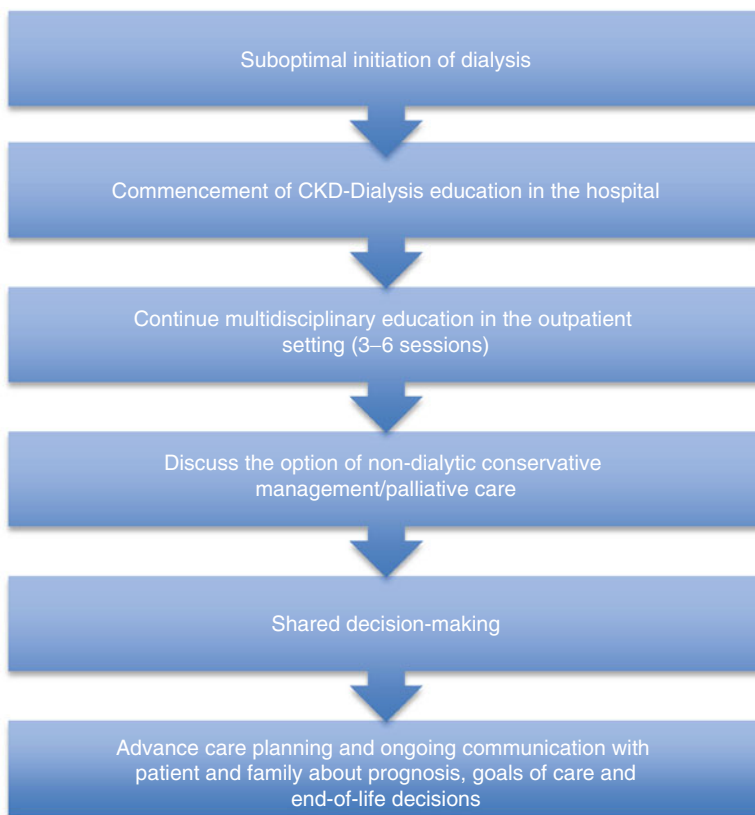
Dialysis education is usually recommended at an eGFR of <30 ml/min, followed by a decision concerning modality between 20 and 30 ml/min.

Pre-dialysis education can determine whether dialysis initiation would be planned or unplanned. The beneficial effect of multidisciplinary care (MDC) in providing pre-dialysis education has been shown in a few studies. Care in the setting of an MDC clinic along with standard nephrology care is known to be associated with a better metabolic profile (higher hemoglobin, albumin, calcium) and lower morbidity and mortality [15]. Patients with multidisciplinary pre-dialysis care are also more likely to have a functioning access at the time of dialysis initiation, fewer hospitalizations, and deaths at 1 year. Lack of MDC and older age and cardiovascular disease are known to be independently associated with increased mortality on dialysis [16].

## Transition to the Community

Without further education, most patients with suboptimal hemodialysis start tend to choose in-center HD as their permanent dialysis modality of choice [17]. This may especially be true in case of the elderly patients, as they are often perceived as being “unsuitable” for a home dialysis therapy possibly due to concerns regarding their frailty, physical and cognitive functioning, and lack of social support. However, with proper education (Fig. 15.1) and understanding of the patient’s support systems and possible barriers to pursuing a home therapy, we may be able to offer alternatives (such as assisted PD) and provide the needed support for patients to pursue home dialysis if they should so desire.

As previously discussed, increased mortality and frailty for elderly dialysis patients has been well documented. These issues need to be factored into the discussion and education provided to patients and their caregivers. Depending on the patient’s overall condition and other prevalent comorbidities, it may be appropriate to discuss conservative management/hospice care in lieu of continuing dialysis.



**Fig. 15.1** Algorithm for transition after suboptimal initiation

An in-hospital CKD-education program for patients with suboptimal dialysis initiation has been shown to increase the number of patients choosing a home dialysis modality for maintenance (35 %) compared to the rates prior to the implementation of the in-hospital education program (13 %) [17]. Also, education of suboptimal HD patients by a renal triage nurse (RTN) may also help achieve similar results [18]. These data suggest that patients with suboptimal dialysis start will benefit from a CKD-education program that is initiated in the hospital and continued as an outpatient, and efforts should be made to facilitate this.

For CKD-dialysis patients to have a good understanding of their disease process, prognosis, pros and cons of different dialysis modalities, generally, 3–6 educational sessions are recommended [19], and these should include information pertaining to non-dialytic conservative management and possibly palliative/hospice care if appropriate.

The concept of advance care planning (ACP) is also gaining ground, which includes ongoing communication between patients, their families, and health care providers about the patients' wishes regarding their end-of-life care. ACP calls for continuing discussion about the prognosis, goals of care, and patient's preferences

as the patient's health deteriorates and end-of-life issues become more relevant [20]. ACP also facilitates change in ESRD therapy if patient desires, as patients can change their mind with ongoing education and communication. Having advance care directives and a healthcare proxy in place is part of ACP [21]. Such patients use less invasive procedures and pursue hospice care sooner, and more frequently [22].

In summary, a smooth transition to the community after suboptimal dialysis initiation requires multidisciplinary CKD-dialysis education that starts in the hospital and continues as an outpatient until the patient is able to make an informed decision, after weighing in all his options.

## Conclusion

There is an increase in the number of elderly patients starting dialysis, and a significant proportion of these patients initiate dialysis suboptimally. Suboptimal dialysis initiation is associated with adverse mortality, hospitalization, economic, and QoL outcomes. Several factors are responsible for suboptimal initiation including late referral to the nephrologist, patient-related factors, lack of surgical resources, and delay in decision-making on part of the nephrologists. Prevention of suboptimal dialysis starts requires a concerted effort to address the underlying factors that lead to this problem in the first place. Educating and aiding the PCPs to identify CKD patients that are likely to progress to ESRD and referring them early to a nephrologist is vital to avoiding late referrals. In addition, multidisciplinary CKD-dialysis education is an important component of pre-dialysis care, which can improve outcomes and increase the likelihood of optimal dialysis initiation. Given the significant burden and increased mortality with dialysis in the elderly, the options of non-dialytic conservative management, time-limited trial of dialysis, and palliative/hospice care should be included in the patient-education program. Advance care planning and ongoing communication with patients and their families will allow a smooth transition when end-of-life care decisions need to be made.

### Key Points

1. Unplanned or suboptimal dialysis initiation is a major problem in the elderly ESRD patients.
2. Suboptimal dialysis initiation is associated with adverse mortality, hospitalization, economic, and QoL outcomes.
3. Multidisciplinary patient education is vital in countering the problem of suboptimal initiation as it helps patients make an informed choice and start dialysis in an optimal manner.
4. Shared decision-making and advance care planning are important strategies to maintain an ongoing communication with patients and their families about goals of care and end-of-life decisions when appropriate.

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