Dialysis Options for End-Stage Renal Disease in Older People

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Key Words

End-stage renal disease • Dialysis options • Quality of life • Haemodialysis • Peritoneal dialysis

Abstract

The numbers of older patients requiring dialysis therapy is rising, reflecting the ageing of the general population. Older dialysis patients have a tendency to present later for dialysis, have a higher number of comorbid conditions, are at higher risk of cognitive dysfunction and have increased levels of frailty. These are all barriers to home dialysis therapy so hospital haemodialysis (HD) is the predominant dialysis modality for older patients. Evidence suggests, however, that home treatment with peritoneal dialysis (PD) intrudes less into the life of older patients than hospital HD. Assisted PD is available in some countries and this enables more older patients to be treated in their own homes. Adjustments to patient education also need to be made to accommodate the barriers to learning and decision-making that often exist in older people.

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Dialysis in Older People: A Growing Population

Dialysis is now considered routine care for the treatment of end-stage renal disease in elderly patients, many of whom have a high co-existent disease burden. In this patient group, dialysis is likely to be for life, with only 15% of all adult transplantations taking place in those aged

≥65 years in the US in 2008 [1]. Twenty-five years ago, 45.1% of UK nephrologists responding to a survey would not offer renal replacement therapy to a 50-year-old man with ischaemic heart disease [2]. In contrast, 15 years later, dialysis was available in the UK for high-risk patients (higher age, severe comorbidities and dependent in relation to functional status) despite a low 1-year survival of 19.2% [3]. Patient's advancing age and comorbid status no longer influences nephrologists' decision to initiate dialysis [4].

The number of older people requiring dialysis can only increase. Older people form the largest growing segment of the dialysis population and the prevalence of chronic kidney disease increases with age. In the UK, from 2005 to 2008, the dialysis population of adults aged ≥65 years grew by 29% compared to only 16% in those aged 18–65 years [5, 6]. A similarly high growth rate in older people on dialysis in the US was seen from 1992 to 1995, after which it has steadily been declining to a plateau with a current rate similar to those aged 20–64 years (11–12%). The oldest old (85 years and over), however, have a high growth rate of 16% [1].

Dialysis for the older and frailer individual is a comparatively new treatment option. Proposing dialysis appears to be limited only by medical or social reasons as opposed to age alone. It is also important to note that the vast majority (94%) of octogenarians opt for treatment where dialysis was deemed appropriate by the renal team [7]. Only 12.5% of those aged ≥80 years would not recommend dialysis to patients of the same age [8].

Table 1. Percentages of prevalent patients aged ≥ 65 years on different dialysis modalities in the US [1], UK [6], Australia and New Zealand [16] and Canada [17] for 2008

Country	Centre HD	Satellite HD	Home HD	Centre HD + satellite HD + home HD	CAPD	APD	CAPD + APD + aPD
USA			1	95	2	3	5
Canada				85			15
UK	48	38	1	87	9	4	13
Australia	27	48	4	79	10	10	20
New Zealand	36	16	8	60	27	12	39

HD = Haemodialysis; PD = peritoneal dialysis; CAPD = continuous ambulatory PD; APD = automated PD; aPD = assisted PD.

Features of the Older Dialysis Group

As a population, older dialysis patients have a tendency to present later for dialysis [9], have a higher number of comorbid conditions, are at higher risk of cognitive dysfunction [10] and have increased levels of frailty [11], all combined with potential sensory impairments [12]. Socially, this may lead to increased difficulty coping at home due to functional and psychological dependencies [13] or alternatively, patients may sometimes be carers themselves [14]. It is perhaps inevitable that the propensity for such limitations should curtail the self-care dialysis treatment options available to older people in the absence of support.

Dialysis Options for the Elderly: An International Comparison

Dialysis for older people is available as a treatment predominantly in developed countries [15]. Even within these different geographical locations, there are varying trends on how older people dialyse as demonstrated in table 1.

Centre-based haemodialysis (HD) is the predominant treatment in the older prevalent dialysis population but ranges from 52% in New Zealand [16] to 94% in the US [1]. There are obvious differences between the two countries in relation to practicalities of undertaking HD due to the differences in geographical accessibility to dialysis centres and reimbursement [18], leading to circumstances where home therapies may be unduly favoured. Nonetheless, the data suggest that a higher proportion of older people may have the potential to be on a home-based treatment. This is reflected in the proportion of older pa-

tients on peritoneal dialysis (PD) and home HD in New Zealand (39 and 8%) and Australia (20 and 4%) [16] compared to the UK (13 and 1%) [6] and in particular, the US (5 and 1%) [1].

Survival and Quality of Life in Older People on Dialysis

Modality (PD compared to in-centre HD) did not affect survival of 14,512 older Canadian patients between 1990 and 1999 when adjusting for several characteristics, e.g. gender and comorbid conditions [19]. A similar finding was reported by the North Thames Dialysis Study in a sample of 123 incident patients ≥ 70 years measuring survival at 1 year [20]. In fact, there have been several reports of reasonable survival for older people on both modalities [20–22]. Higher mortality rates were, however, seen in incident older diabetic PD patients from the US in the first 3 months of treatment and between months 6–12 in a 1-year study [23]. These findings may reflect dialysis populations in countries with low PD utilisation.

Quality of life (QOL) is probably a more pertinent outcome in assessing the different and most usually life-long dialysis options for the elderly. Two studies have focused on QOL in the elderly, comparing HD and PD. The North Thames Dialysis Study found no difference between QOL in patients >70 years old on PD or HD [24]. In the more recent BOLDE study, we conducted multiple QOL assessments and found that older HD patients experienced more illness and treatment intrusion compared to those on PD even after adjustment for multiple confounders, e.g. comorbidities [25]. When considering home dialysis in older people, however, the impact on caregivers is also an important consideration. Worse Mental Component

Summary scores from the SF-36 were found in caregivers of elderly PD patients compared to caregivers of elderly HD patients [26].

Home-Based Dialysis Solutions for the Elderly

The declining independence levels seen in older people make HD an attractive option where dialysis can be managed by trained specialists. Equally, if not more appealing is the ability to support older patients and their carers within their homes. Patients incapable of self-care PD can be supported through assisted PD (aPD), where trained staff provide daily dialysis assistance either in nursing homes or in patients' homes.

There are several reports of successful PD for nursing-home residents [27, 28]. In areas where aPD is available to support patients within their homes, 75% of those who chose PD received aPD compared to self-care PD. This is perhaps unsurprising as 81% of an incident end-stage renal disease population in Ontario, Canada, had at least one medical or social barrier to self-care PD [29]. Home HD is also offered to nursing-home residents in the US [30].

The Largest and Longest Experience of aPD with Excellent Survival Results

A recent report from the French Peritoneal Dialysis Registry for 1,613 patients aged ≥ 75 years commencing on PD between 2000 and 2005 showed that 76% needed assistance by community private nurses to perform the dialysis exchanges [22]. The nurse-assisted patients had a median survival of 27.1 months which compares favourably to the 50% survival of 24 months for all new patients on renal replacement therapy >75 years old in the UK Renal Registry [6]. Canadian data also show that adverse events (e.g. hospitalisations and death) were no different between patients on aPD and other dialysis modalities in older people, although this was compared only in small numbers [29]. Supporting dialysis therapies at home therefore appears to be a viable dialysis option for the elderly who may experience difficulties in undertaking self-care treatments or attending dialysis facilities.

Modality Education and Older People

As we have discussed above, many older patients could be eligible for home dialysis options, particularly if assis-

tance is available. During the predialysis phase while in renal clinics, they should be provided with education to enable them to participate in the decision regarding the most appropriate dialysis modality for them. If we consider the wider context of governmental goals for encouraging health benefits for the UK population, involvement in treatment decisions is certainly a focal point [31]. The choice of dialysis modality is a prime example where the patient's personal values should be matched with the medical characteristics of the treatment in order to maximize achievable QOL. Even in locations where dialysis modality options exist, these may not always be presented in an appropriate manner to the older patient. Written information from renal units is often complex and difficult to understand [32], hindering decision-making in a group already vulnerable to comprehension errors [33]. Increasing age was associated with fear that home-based treatments were substandard compared to in-centre dialysis in a sample of HD patients [34]. Education is therefore critical in clarifying misconceptions. Older people are more likely to prefer the healthcare team to make treatment decisions, although there is wide variation in this [35, 36]. There is also evidence that healthcare teams will respond by taking dialysis treatment decisions on behalf of older patients [36]. Therefore, there is a real risk within this patient group that the modality favoured by the renal team becomes the treatment of choice.

Conclusions

Increasingly, supported and home based permutations of current dialysis modalities are being considered and used successfully in older people who have barriers to self-care. Assisted home therapies (PD and HD) would enable older people to be treated in a manner that may be best suited to their needs and caregivers would be relieved from the burden that often accompanies the role. Unfortunately, dialysis options for the elderly largely depend on what alternatives are available within the residing country. Providing a real choice of modality not only requires commitment and support at government level but, in addition, requires an appreciation by all those involved in educating patients of the barriers to learning that older people face and adjust their education accordingly.

Disclosure Statement

The authors have no conflicts of interest to declare.

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