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Editorial Comment

EDITORIAL COMMENT

Home dialysis: advantages and limitations

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Despite known clinical and social advantages (such as flexibility, quality of life, and autonomy) [1], domiciliary dialysis techniques, either home hemodialysis (HHD) or peritoneal dialysis (PD), have low penetration in developed countries [2].

Kidney Disease: Improving Global Outcomes (KDIGO) conducted a conference on home dialysis and recommended that all patients with stage 5 chronic kidney disease on replacement therapy should have the option of undergoing dialysis at home [2]. Nevertheless, in many countries, home dialysis is limited to patients who have autonomy and good economic status (especially when discussing HHD), while the more dependent and fragile patients are limited to facility-based hemodialysis, except if they can afford to have a nurse helping them for both PD and HHD [3].

Studies dealing with the economic impact of dialysis techniques indicate that home dialysis costs for either HHD or PD can be as high as in facility-based hemodialysis, as the initial implementation of HHD at the patient's home is costly [4], as are PD consumables, especially automatic PD. Nevertheless, US studies have revealed that the more time HHD patients are maintained at home, the more money is saved [5]. If we add the costs of traveling home to facility-based hemodialysis and vice versa, the savings from in-home dialysis are greater. Overcoming the economic impact, the carbon footprint may also be lower in-home dialysis if the transportation requirements of facility-based hemodialysis are added to equation [2], but more in-depth studies must be performed.

As the transitions from home techniques to facility-based hemodialysis seem to be related to high mortality rates, Lanot and colleagues tried to assess the risk of transfer from home dialysis modalities (either autonomous PD, assisted PD, or HHD) to facility-based hemodialysis, using a national dialysis registry (the REIN) [6].

In this single center retrospective analysis, the authors followed all incident patients for home dialysis (17.909 patients) from 2002 to 2018: 628 patients with HHD, 10.214 with autonomous PD, and 7.067 with assisted PD. This analysis revealed that 6.499 patients died, 5.347 were transferred to facility-based hemodialysis, 3.307 were transplanted, and 696 recovered their kidney function. The median follow-up period was 18 months. Only 2060 patients were maintained in-home dialysis during the analysis period (17 years).

One of the first things that we identified in this study is the large number of patients with PD over the 17 years, and the fact that the number of patients with assisted PD is close to the number of patients with autonomous PD. The reimbursement system in France allows them to have assisted PD available as a dialysis modality for all patients, and this seems to increase the incidence and prevalence of more fragile and comorbid patients undergoing home dialysis, who would otherwise be selected for facility-based hemodialysis. Second, a national system with adequate and just reimbursement systems for home techniques is successful in having patients perform treatments at home [3, 5].

Looking closer at the numbers, the percentages of transfers to facility-based HD were 32% for autonomous PD, 23.3% for assisted PD, and 23.7% for HHD, with no differences in the propensity score (PS) -matched cohort, although patients with HHD had a lower probability of transfer in the unmatched cohort.

The percentage of deaths was 25.1% in autonomous PD, 48.7% in nurse-assisted PD, and 7.5% in HHD, most likely with a higher risk of death with nurse-assisted PD, and a lower risk of death in HDD, using the unmatched cohort (probably related

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to comorbidity). When comparing PD with HHD, in both PS-matched and unmatched cohorts, HHD had a lower risk of death.

These are very good news for home therapies for kidney failure, but it would be interesting to know how the transitions from one home dialysis technique to another were. Despite these results, we must be aware that this is an observational study, with data limitations, as there was no assessment or comprehensive data on the socioeconomic status of the patients, center protocols, or causes/reasons for transfers to facility-based HD. Understanding these factors could provide valuable insights into the barriers that prevent more vulnerable patients from accessing home dialysis options.

Even so, improving and expanding home healthcare availability could make home dialysis accessible, even to the most vulnerable patients. Nevertheless, patients with significant neurologic and/or psychiatric diseases or those using sedating medication are not good candidates for home dialysis without supervision. Home dialysis has numerous clinical advantages, as it reduces the long interdialytic gap, and can favor the control of hyperphosphatemia, left ventricular hypertrophy, and resistant hypertension. Therefore, a comprehensive approach is needed to promote home dialysis, including assisted PD and HHD [7], and a 6-step approach to increase the number of patients in-home therapies (identification—assessment—eligibility—offer—choice—transition to home therapy) implemented in all nephrology centers [8, 9].

From our perspective, additional key points need to be addressed.

Education is central, either pre-dialysis or ongoing education, even after dialysis is initiated. Improving patient education on the benefits, procedures, management, and training of home dialysis will simplify home therapy. Nonetheless, the education of nephrologists and their teams on home therapies is also crucial to avoid bias established by referring most patients to in-center hemodialysis [10]. Education of both patients and healthcare professionals could benefit the shared-decision process and empower patients to choose the modality that fits their needs better.

The development of a telemedicine infrastructure can enhance home therapy safety and attractiveness by providing timely access to nephrologists and nurses. Remote patient monitoring improves outcomes and changes attitudes, as shown in a recent review article by Lew and Ronco [11]. Additionally, the development of robust local and virtual community support networks could benefit patients by providing practical advice and emotional support. Therefore, advances in-home dialysis technology should focus on its efficiency and friendliness.

As seen in the US example, government regulations and incentives can help physicians and patients to shift to home-based treatment. The main financial barriers to home dialysis are the high initial setup costs for HHD equipment and ongoing consumable costs for PD, along with reimbursement policies that may only partially fund home-based treatment. Ensuring fair payments for dialysis providers is fundamental. In addition, financial support programs or fiscal advantages for family members who act as helpers' in-home therapies would be advisable, as explained in a recent review by Desbiens *et al.* [12].

Finally, public awareness campaigns that promote the benefits of home dialysis could change public opinion and encourage its adoption.

CONFLICT OF INTEREST STATEMENT

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