www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

Bulletin de la Dialyse à Domicile

Managing Transition between dialysis modalities: a call for Integrated care In Dialysis Units

(Gérer la transition entre les modalités de dialyse : un appel à l'intégration des soins dans les unités de dialyse)

[1] Bruno Fraga Dias, [1,2,3]Anabela Rodrigues

[1] Dept de néphrologie, Hospital de Santo António (HSA),CH do Porto (CHUPorto), 4099-001 Porto, Portugal.[2]UMIB - Unité recherche multidisciplinaire en biomédecine, ICBAS - École de médecine et de sciences biomédicales, Université de Porto, Portugal. [3]ITR - Laboratoire de recherche intégrative et translationnelle en santé des populations, Porto, Portugal

To cite : Fraga Dias B, Rodrigues A. Managing Transition between dialysis modalities: a call for Integrated care In Dialysis Units . Bull Dial Domic [Internet]; 4(4). Available from:https://doi.org/10.25796/bdd.v4i4.69113

Note : cette publication est bilinguale et disponible en français au même url : https://doi.org/10.25796/bdd.v4i4.69113

Summary

Patients with chronic kidney disease have three main possible groups of dialysis techniques: in-center hemodialysis, peritoneal dialysis and home hemodialysis. Home dialysis techniques have been associated with clinical outcomes that are equivalent and sometimes superior to those of in-center hemodialysis

Transitions between treatment modalities are crucial moments. Transition periods are known as periods of disruption in the patient's life associated with major complications, greater vulnerability, greater mortality and direct implications for quality of life. Currently it is imperative to offer a personalized treatment adapted to the patient and adjusted over time.

An integrated treatment unit with all dialysis treatments and a multidisciplinary team can improve results with establishment a life plan, promote health education, medical and psychosocial stabilization and the reinforcement of health self-care. This units will result in gains for the patient's journey and will encourage home treatments and better transitions.

Peritoneal dialysis as the initial treatment modality seems appropriate for many reasons and the limitations of the technique are largely overcome by the advantages (namely autonomy, preservation of veins and preservation of residual renal function).

The transition after peritoneal dialysis can (and should) be carried out with primacy of home treatments. Assisted dialysis must be considered and countries must organize themselves to provide an assisted dialysis program with paid caregivers.

The anticipation of the transition is essential to improve outcomes, although there are no predictive models that have high accuracy; this is particularly important in transition to hemodialysis (at home or in-center) in order to planning an autologous access that allows a smooth transition.

Key words : transition, home diaysis, peritoneal diaysis, in-center hemodialysis

Résumé

Les patients souffrant d'insuffisance rénale chronique disposent de trois grandes techniques de dialyse possibles : l'hémodialyse en centre, la dialyse péritonéale (DP) et l'hémodialyse à domicile. Les transitions entre modalités de traitement sont des moments cruciaux. Les périodes de transition sont connues comme des périodes de perturbation de la vie du patient associées à des complications majeures, et une plus grande vulnérabilité. Actuellement, il est impératif de proposer un traitement personnalisé, avec un plan de soins adapté au patient et ajusté dans le temps.

Le parcours de transition doit être préparé avant même le début de la dialyse. Les unités de soins de transition jouent un rôle important avec une équipe multidisciplinaire préparée pour établir un plan de vie, promouvoir l'éducation à la santé et renforcer l'autosoin. Ces unités permettront d'améliorer le parcours du patient et encourageront les traitements à domicile et de meilleures transitions. La DP en 1ere intention semble appropriée pour de nombreuses raisons, à savoir l'autonomie, la préservation des veines et la préservation de la fonction rénale résiduelle.

La transition après DP peut (et doit) s'effectuer avec la perspective du maintien de la dialyse à domicile qui assure la possibilité de maintenir une dialyse quotidienne associée à une moindre amplitude de variation hémodynamique et biologique et à un meilleur contrôle de la pression artérielle, de l'hyperphosphatémie et de la qualité de vie. La dialyse assistée doit être envisagée et les pays doivent s'organiser pour offrir un programme de dialyse assistée avec des soignants rémunérés.

L'anticipation de la transition est essentielle pour améliorer les résultats, bien que les modèles prédictifs montrent une précision limitée ; ceci est particulièrement important dans la transition vers l'hémodialyse (à domicile ou en centre) afin d'assurer une planification opportune de l'accès vasculaire et une transition en douceur.

Mots clés : transfert, diayse à domicile, dialysis péritonéale, dialyse en centre

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

Introduction

Patients with chronic kidney disease have three main possible groups of dialysis techniques, each of which may have several specificities: in-center hemodialysis and home dialysis (peritoneal dialysis and home hemodialysis).

Home dialysis modalities have been associated with clinical outcomes that are equivalent and sometimes superior to those of in-center hemodialysis [1-3]. Home therapies allow for less disruption to patients' routines, greater freedom, and better time management [4, 5].
Regardless of the first modality, the possibility of transferring the technique in the future should be highlighted early to the patient (even in the absence of identified risk factors) according to the patient's «dialysis life plan». In fact, the decision to transfer between techniques must be understood as a continuous treatment process.

The transition: importance and scope

The concept of transition is broad and applied in the transition between chronic kidney disease and the beginning of chronic dialysis treatment, between the various dialysis techniques and, eventually, a transition to conservative treatment (Figure 1). This topic is important because the transition periods are known as periods of disruption in the patient's life associated with major complications, greater vulnerability, greater mortality, and direct implications for quality of life [6-8].

The choice of dialysis modality for each patient is influenced by several factors: experience of the center and the nephrologist, health system, demographics and geographic situation, comorbidities, and frailty [6]. The most appropriate modality for each patient may not be unique and the patient may benefit from a combination of modalities over time. Younger patients with a lifetime of renal replacement will require several modality switches over the years, and there is some evidence that the use of more than one dialysis modality can confer benefits [9]. The nephrologist must clarify the goals and expectations of the patient and only in this way will provide a personalized treatment. The clinical team is responsible for the progressive follow-up of the patient, discussion about the technique to propose and the appropriate moment of transition.

We will discuss some aspects related to the transition between the techniques with primacy of home dialysis, whenever possible.

Preparing for dialysis: Achilles tendon or golden opportunity?

Several observational studies have shown that the first few months on dialysis are critical, especially the first 90-120 days, which are associated with an increased risk of mortality [10, 11]. Patient-related risk factors that are associated with these outcomes include age, cardiovascular disease, malnutrition, inflammation, anemia, and frailty [10-12]. Inadequate nephrological care and poor transitional management potentiate these results. The pre-dialysis and peri-dialysis period presents an opportunity to address several deficits in the management of end-stage renal disease, a window to implement new interventions, an opportunity for improving education and the best opportunity to introduce home and personalized treatments [6]. This concern is not new the first published example dates from 1981 [13] and arose in response to the decreasing rate of

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

home dialysis choice in the USA: the authors established a teaching program over six "units," emphasizing modality, dietary and access education, patient rehabilitation, and the possibility of safe transitions to home dialysis, when applicable. It was a pioneering way to involve patients in their own treatment and increasing the number of home treatments.

The awareness of the need for personalized treatments and provision of multidisciplinary care led to the development of transition care units. These units are specialized in transition, preparing the patient for the start of dialysis with the aim of improving patient outcomes, offering a holistic approach and personalized treatment [14].

Referral to the transition clinic should be decided according to the risk of progression of chronic kidney disease [14]. The non-linear decline in glomerular filtration rate limits accurate projections about disease progression but the risk can be estimated by using the Kidney Failure Risk Equation, the most widely validated formula [15]. According to KDIGO, patients with an ESKD risk in the range of 10-20% within one year should be referred for planning dialysis [16].
Early referral has been associated with better outcomes (lower mortality, shorter hospitalizations, better access to transplantation, increased number of patients receiving home care, and better management of vascular and peritoneal access [14, 17, 18]; however, referral too early can lead to the inclusion of patients who may never benefit from such specialized care.

After inclusion in the transition program, investment in patient education is central and essential. The reduced information provided to patients with chronic kidney disease is associated to the reduced expression of home dialysis among incident patients and is related to some of the adverse outcomes at the beginning of dialysis [19]. Additionally, several studies still indicate that patients with CKD feel that their decision is not informed [20, 21].

Patients with chronic kidney disease have additional educational challenges due to the presence of identified barriers [22]:
-At the patient level: the low level of health literacy, low learning capacity, and comorbidities.
-At the clinical level: the time/resource constraints, disease complexity, low patient receptivity, and lack of consensus on the best appropriate moment.
-At the systematic level: the lack of multidisciplinary teams, poor communication between specialties, and lack of monetary incentives.

Investment in patient education is a central objective of pre-dialysis transition care; it allows the possibility of delineating a life plan in chronic kidney disease with informed choice of dialysis modality (or refusal of dialysis treatment). Education about the disease, treatment modalities, psychosocial matters, transplantation, nutrition, and vascular access offers opportunities for self-care, alleviating fears and motivating patients to choose home modalities; additionally, patients develop autonomy for the management of the disease and associated comorbidities [23].

The transition clinic requires a multidisciplinary team (nephrologists, specialized nurses, nutritionists, social workers, psychologists, psychiatrists, and pharmacists); several studies indicate that this multidisciplinary approach improves outcomes, although there is no exact consensus on the best form of organization [24, 25]. Preferably, the time that each patient should spend with each professional should be determined by the individual needs [14]. The presence of a professional team familiarized with the various possible treatments (namely home treatments)

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

provides a better individual and familiar support and makes it possible to learn home therapies in an integrated way.

As a result of improved education and a shared and timely decision on the dialysis modality, it is possible to plan a vascular or peritoneal access circuit in order to optimize the outcomes of transitions [14].

From end stage chronic kidney disease to first dialysis: is peritoneal dialysis the way?

Peritoneal dialysis (PD) as the initial treatment modality (Figure 1) seems appropriate for many reasons: quotidian dialysis, preservation of residual renal function, preservation of vascular accesses, convenience of home therapy, flexible times to treatment, and greater feeling of freedom [26, 27].

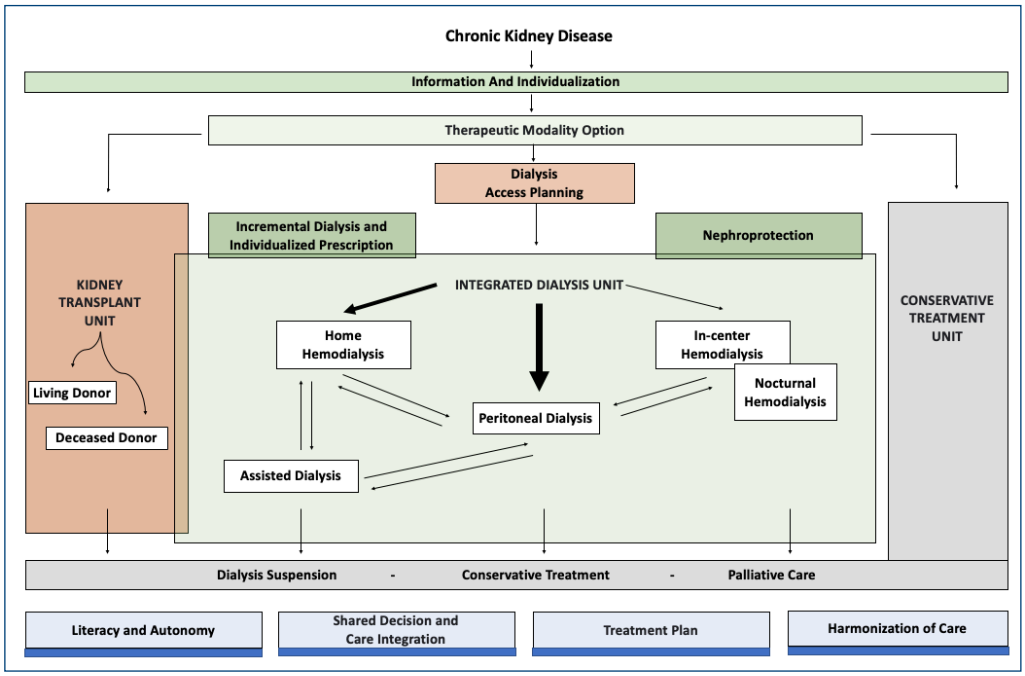

Figure 1: Algorithm for choosing different dialysis modalities

In addition, peritoneal dialysis easily allows for patient-tailored prescription and incremental dialysis - incremental peritoneal dialysis has several documented benefits, including preservation of residual renal function, reduced risk of peritonitis, less exposure to glucose, greater environmental protection, and reduced costs [28].

Outcomes related to quality of life are discrepant between studies [29, 30]; a recent systematic review and meta-analysis showed that patients treated with PD had better generic, health-related quality of life measured by 36-Item Short Form Health Survey and EuroQoL-5-dimension than hemodialysis patients [31].

Survival on dialysis is still one of the most important considerations and some authors showed a better survival of PD patients compared to hemodialysis (HD) patients during the first 2 years of dialysis treatment [26]; this benefit of early survival in peritoneal dialysis patients compared to HD patients has been confirmed and discussed in recent a revision [32].

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

The percentage of patients who are transferred from peritoneal dialysis to hemodialysis in the first year remains high in most studies [33]. This should not be a factor against the «PD first» but it forces reflection on the admissibility criteria of these patients and on the risk-benefit balance. Recently, the Australia and New Zealand registry (ANZDATA) identified some factors associated with early transfer of patients: prior renal replacement therapy, age over 70, body mass index less than 18.5 kg/m2, diabetes, ischemic heart disease, cerebrovascular disease, peripheral vascular disease, late referral to nephrology, and treatment in a smaller center [6, 34]. Another study confirmed that treatment in an experienced center (more than 20 incident patients per year) appears to be associated with increased success after initiation of the technique [35].

It seems clear that the success of the technique is dependent on multiple factors, not all of them modifiable. Success may involve increased patient motivation in the process of choosing the technique, greater family involvement in the decision, and discussion about assisted dialysis.

The aging of the population is a challenge for nephrologists; assisted peritoneal dialysis can help maintain home dialysis in elderly patients or in patients with other physical, social, or cognitive limitations. This is especially true if there are other important reasons that do not favor the transition: poor hemodialysis tolerance, living in a remote area where transport to the hemodialysis center can be challenging, and the patient's sustained desire to maintain home dialysis [36].
Assisted peritoneal dialysis allows assistance for the technique by trained professionals, family members or other cohabitants. This technique is already available in many countries, with regional differences: in France, continuous assisted ambulatory peritoneal dialysis is predominantly used unlike in Canada, where the automated peritoneal dialysis is the most used [36].

Data from France and Denmark suggest that the cost of assisted dialysis is similar to in-center hemodialysis [37, 38] but actually, in the United States of America and Portugal there is no framework for paying for assisted dialysis caregivers.

A recent study showed the feasibility of providing assisted PD by using externally contracted caregivers, with minimization of costs compared to the transition to in-center hemodialysis which constitutes a good argument from the point of view of public funding [39].
The available data indicate that assisted peritoneal dialysis is equally safe. Data from the French Language Peritoneal Dialysis Registry show that the risk of peritonitis was reduced in elderly patients with nursing care [40], and a recent study showed that satisfaction with treatment is higher in assisted PD (compared to in-center hemodialysis) [41].

The authors argue that peritoneal dialysis should be preferred as the first technique, especially in patients with a possible long course of renal disease. Assisted peritoneal dialysis is a clear alternative to the patient who loses autonomy (in a transitory or definitive way) (Figure 1). Efforts should be made to formalize paid caregivers in countries where this reality does not exist.
The possibility of keeping the patient in the preferred modality, when feasible, should be a quality parameter for service providers.

Transition peritoneal dialysis to home hemodialysis : a utopia or an unexplored reality?

After exhausting the potential of peritoneal dialysis in patient who wants to maintain home dialysis the ideal solution would be home hemodialysis. Home hemodialysis (HDD) is slowly be-

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

coming more accessible, although it is still non-existent or residual in many countries (namely in Portugal) [42] and PD to HHD transitions are relatively infrequent (between 5 and 15%, depending on the data) [43, 44]. One identified barrier for offering direct home-to-home transition is that patients often develop significant comorbidities or complications after the first home dialysis modality technique failure, which, in some cases, may limit continuation of home treatment [45].

A certain percentage of transitions to home hemodialysis are from patients who have previously been treated with peritoneal dialysis [46] and this "selection" is not related to worse outcomes in HHD [47]. A recent study showed that patients with previous PD had similar cumulative patient and technique survival on HHD compared to patients without previous PD [42]. Another study showed that patients transferred to HHD after PD technique failure was associated with lower risk of death and higher incidence of transplant than transfer to in-center hemodialysis (although it lacks further validation) [48]. Successful transitions between home modalities have been reported in other case series [49, 50].

The maintenance of home dialysis, with the transition from PD to HHD, has yet another obvious benefit: the possibility of maintaining daily dialysis. Daily or continuous dialysis regimens are more similar to native kidney function and reduce the magnitude of solute removal and fluid oscillations, with an advantage over intermittent regimens [51]. A systematic review shows that the beneficial effect of daily hemodialysis on hypertension and left ventricular hypertrophy appeared to be relatively consistent across studies [52]. Other studies showed the benefit of daily hemodialysis compared to conventional hemodialysis in terms of controlling hyperphosphatemia [53, 54] and reduction in number of antihypertensive drugs [55]. A recent randomized trial with daily dialysis showed benefits in improving quality of life, general health, and recovery time after the dialysis session [56]. Despite the evidence regarding the benefits of daily hemodialysis, generally it was not accepted as a center-based hemodialysis regimen, given the increased costs (namely with transport) and the inconvenience for the management of the units. Keeping the therapy at home solves this problem.

The period of transition between home modalities is challenging, and little has been published about the implementation of a model of transition from a home to a home modality [43, 50]. Some specific aspects such as need for hospitalization, need for a transitional period of in-center hemodialysis (critical point), training time, and specificities related to the creation and maintenance of vascular access require further research. In a recent retrospective study that evaluated the home-to-home transition over 24 years, half of the cohort required a period of hospitalization and, temporarily, in-center hemodialysis [45].

The process of improving education about dialysis and involving the patient and family in treatment is recognized as a pillar for home dialysis. Home hemodialysis is still residual and the lack of a structure for training patients in order to have the capacity for hemodialysis at home is a factor that contributes to this reality, requiring quick responses from hospitals.
In order to respond to this problem, transitional care units (TCU) emerged [57]. The TCU model consist of independent units that allow all modalities of dialysis treatment in the same place. The four pillars of the units are the establishment of a life plan, health education, medical and psychosocial stabilization, and the reinforcement of self-care [58].
The TCU model offers a program structured by dedicated staff, with better professional/patient ratios than a conventional unit and with the capacity to provide educational services and prepare

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

patients for the dialysis journey. These programs include self-management skills, education, and informed decision support, integration of dialysis techniques and skills related to vascular access [57]. These units can be applied in a public model (preferably) or in a conventional model, which will result in gains for the patient's journey and will encourage home treatments and better transitions (Figure 1). Specificities related to vascular access (discussed below) also apply to this transition.

Transition between peritoneal dialysis to in-center hemodialysis: the late villain?

The incidence of transition from peritoneal dialysis to in-center hemodialysis (ICH) varies worldwide (3-year transfer rates between 25-40%) and the reasons vary by time of transfer: catheter dysfunction is the main early cause (3-6 months); infections and poor adequacy are the main late etiologies [59]. Peritonitis is one of the main causes of transfer from peritoneal dialysis to hemodialysis, and only a small percentage of patients return to peritoneal dialysis after peritonitis requiring removal of the Tenckhoff catheter [33].

Predicting transfer risk is a challenge for the clinical team. Anticipation and attention are key to a timely transfer under the best conditions. In this setting, anticipation is important in several ways:
-mortality after transition to ICH can be as high as 25% if the transition is unplanned [60].
-anticipation allows the timely construction of a vascular access, avoiding urgent transfers with a central venous catheter (associated with worse short- and long-term outcomes) [61, 62].
-anticipation allows the patient to adapt to the new reality, avoiding sudden and unexpected transitions, reducing the anguish and feeling of autonomy loss. In addition, it allows early action to be taken to reduce the need for transfer between modalities.

The assessment of mortality in the transition between peritoneal dialysis and hemodialysis has not been described using large populations. An American prospective study showed similar mortality between patients on peritoneal dialysis and those who transitioned to in-center hemodialysis [33]. The reason for transfer also contributes to post-transfer mortality: one study showed that patients with mechanical complications had a lower risk of mortality after transition compared to patients who transitioned due to infectious complications [63].

The prognosis is determined by how the transition occurs; timely planning and construction of an autologous access is essential for a smooth transition. However, the moment of construction of the access is difficult to determine and the coordination with the surgical team is not fast in all places. The construction of a preventive vascular access in all peritoneal dialysis patients is not admissible in the light of current knowledge [61, 64, 65].
Some factors have been recognized as associated with the transfer to hemodialysis and with the need for early construction of an autologous access: a Portuguese observational study showed that patients with low Kt/V, low albumin, higher number of hospitalizations and peritonitis represent a high-risk PD population where arteriovenous access should be weighed [66]. However, the individualization of risk depends on many subjective factors, namely related to the physician's clinical evaluation.

The experience of transition between home hemodialysis and in-center dialysis is residual and there are few data available.

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

Conclusions

Nephrology departments must be organized to pursue the goals and preferences of patients, and University Hospitals must make an effort to offer all the options available to patients and allow the training of residents.
Transitions between techniques are probably unavoidable over the course of renal disease but must be anticipated to avoid urgent transitions, which are always associated with worse outcomes.

Keeping the patient on home dialysis should be preferred if it is the patient's will and if there is no medical contraindication. Assisted dialysis needs to be developed in some countries and become paid to allow for its wider use.
An integrated treatment unit with all dialysis treatments and a multidisciplinary team can improve results (Figure 1).

Declaration of conflicting interests

The authors did not act as Reviewer or Editor of this article. There are no personal conflicts of interest or financial relationships relevant to this publication.

Authorship

Conception and design: Anabela Rodrigues. Literature review and drafting of the article: Bruno Fraga Dias. Critical revision of the article for important intellectual content and final approval: Anabela Rodrigues.

Ethical approval

This is a systematic review so none.

Correspondence:
Anabela Rodrigues, MD, PhD
E-mail: rodrigues.anabela2016@gmail.com
Address: Department of Nephrology, Hospital de Santo António (HSA), Centro Hospitalar do Porto (CHUPorto), 4099-001 Porto, Portugal

ORCIDid :
Bruno Fraga Dias: 0000-0001-9882-5171
Anabela Rodrigues: 0000-0001-8818-2141

REFERENCES

1. Suri, R.S., L. Li, and G.E. Nesrallah, The risk of hospitalization and modality failure with home dialysis. Kidney Int, 2015. 88(2): p. 360-8.
2. Weinhandl, E.D., et al., Survival in daily home hemodialysis and matched thrice-weekly in-center hemodialysis patients. J Am Soc Nephrol, 2012. 23(5): p. 895-904.
3. Marshall, M.R., et al., Home hemodialysis and mortality risk in Australian and New Zealand populations. Am J Kidney Dis, 2011. 58(5): p. 782-93.
4. Walker, R.C., et al., Patient and caregiver values, beliefs and experiences when considering home dialysis as a treatment option: a semi-structured interview study. Nephrol Dial

journal officiel du Registre de Dialyse Péritonéale de Langue Française RDPLF www.rdplf.org

https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

Transplant, 2016. 31(1): p. 133-41.
5. Finkelstein, F.O., et al., At-home short daily hemodialysis improves the long-term health-related quality of life. Kidney Int, 2012. 82(5): p. 561-9.
6. Imbeault, B. and A.C. Nadeau-Fredette, Optimization of Dialysis Modality Transitions for Improved Patient Care. Can J Kidney Health Dis, 2019. 6: p. 2054358119882664.
7. Marshall, M.R., et al., Temporal Changes in Mortality Risk by Dialysis Modality in the Australian and New Zealand Dialysis Population. Am J Kidney Dis, 2015. 66(3): p. 489-98.
8. Griva, K., et al., The impact of treatment transitions between dialysis and transplantation on illness cognitions and quality of life - a prospective study. Br J Health Psychol, 2012. 17(4): p. 812-27.
9. Lambie, M. and S.J. Davies, Transition between home dialysis modalities: another piece in the jigsaw of the integrated care pathway. Nephrol Dial Transplant, 2015. 30(11): p. 1781-3.
10. Johansen, K.L., et al., Frailty and dialysis initiation. Semin Dial, 2013. 26(6): p. 690-6.
11. Bradbury, B.D., et al., Predictors of early mortality among incident US hemodialysis patients in the Dialysis Outcomes and Practice Patterns Study (DOPPS). Clin J Am Soc Nephrol, 2007. 2(1): p. 89-99.
12. van Diepen, M., et al., Predicting mortality in patients with diabetes starting dialysis. PLoS One, 2014. 9(3): p. e89744.
13. Eschbach, J.W., et al., A hemodialysis orientation unit. Nephron, 1983. 33(2): p. 106-10.
14. Evans, M. and K. Lopau, The transition clinic in chronic kidney disease care. Nephrol Dial Transplant, 2020. 35(Suppl 2): p. ii4-ii10.
15. Tangri, N., et al., Multinational Assessment of Accuracy of Equations for Predicting Risk of Kidney Failure: A Meta-analysis. Jama, 2016. 315(2): p. 164-74.
16. Kidney Disease: Improving Global Outcomes CKD Work Group. KDIGO clinical practice guideline for the evaluation and management of chronic kidney disease. Kidney Int Suppl, 2013. 3:: p. 1–150.
17. Smart, N.A., et al., Early referral to specialist nephrology services for preventing the progression to end-stage kidney disease. Cochrane Database Syst Rev, 2014(6): p. Cd007333.
18. Stack, A.G., Impact of timing of nephrology referral and pre-ESRD care on mortality risk among new ESRD patients in the United States. Am J Kidney Dis, 2003. 41(2): p. 310-8.
19. Mendelssohn, D.C., et al., A prospective evaluation of renal replacement therapy modality eligibility. Nephrol Dial Transplant, 2009. 24(2): p. 555-61.
20. Dahlerus, C., et al., Patient Perspectives on the Choice of Dialysis Modality: Results From the Empowering Patients on Choices for Renal Replacement Therapy (EPOCH-RRT) Study. Am J Kidney Dis, 2016. 68(6): p. 901-910.
21. Harwood, L. and A.M. Clark, Understanding pre-dialysis modality decision-making: A meta-synthesis of qualitative studies. Int J Nurs Stud, 2013. 50(1): p. 109-20.
22. Cassidy, B.P., et al., Barriers to Education and Shared Decision Making in the Chronic Kidney Disease Population: A Narrative Review. Can J Kidney Health Dis, 2018. 5: p. 2054358118803322.
23. Morfín, J.A., et al., Transitional dialysis care units: A new approach to increase home dialysis modality uptake and patient outcomes. Semin Dial, 2018. 31(1): p. 82-87.
24. Shi, Y., et al., The effectiveness of multidisciplinary care models for patients with chronic kidney disease: a systematic review and meta-analysis. Int Urol Nephrol, 2018. 50(2): p. 301-312.
25. Wang, S.M., et al., Multidisciplinary care in patients with chronic kidney disease: A systematic review and meta-analysis. Eur J Intern Med, 2015. 26(8): p. 640-5.

www.bdd.rdplf.org Volume 5, n° 4, december 2022
https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

26. Chaudhary, K., H. Sangha, and R. Khanna, Peritoneal dialysis first: rationale. Clin J Am Soc Nephrol, 2011. 6(2): p. 447-56.
27. Jansen, M.A., et al., Predictors of the rate of decline of residual renal function in incident dialysis patients. Kidney Int, 2002. 62(3): p. 1046-53.
28. Cheetham, M.S., et al., Incremental Versus Standard (Full-Dose) Peritoneal Dialysis. Kidney Int Rep, 2022. 7(2): p. 165-176.
29. Kang, S.H., et al., Effect of dialysis modality on frailty phenotype, disability, and health-related quality of life in maintenance dialysis patients. PLoS One, 2017. 12(5): p. e0176814.
30. Kutner, N.G., et al., Health status and quality of life reported by incident patients after 1 year on haemodialysis or peritoneal dialysis. Nephrol Dial Transplant, 2005. 20(10): p. 2159-67.
31. Chuasuwan, A., et al., Comparisons of quality of life between patients underwent peritoneal dialysis and hemodialysis: a systematic review and meta-analysis. Health Qual Life Outcomes, 2020. 18(1): p. 191.
32. Marshall, M.R., The benefit of early survival on PD versus HD-Why this is (still) very important. Perit Dial Int, 2020. 40(4): p. 405-418.
33. Jaar, B.G., et al., Timing, causes, predictors and prognosis of switching from peritoneal dialysis to hemodialysis: a prospective study. BMC Nephrol, 2009. 10: p. 3.
34. See, E.J., et al., Risk Predictors and Causes of Technique Failure Within the First Year of Peritoneal Dialysis: An Australia and New Zealand Dialysis and Transplant Registry (ANZDATA) Study. Am J Kidney Dis, 2018. 72(2): p. 188-197.
35. Béchade, C., et al., Early failure in patients starting peritoneal dialysis: a competing risks approach. Nephrol Dial Transplant, 2014. 29(11): p. 2127-35.
36. Brown, E.A. and M. Wilkie, Assisted Peritoneal Dialysis as an Alternative to In-Center Hemodialysis. Clin J Am Soc Nephrol, 2016. 11(9): p. 1522-4.
37. Béchade, C., et al., Assisted Peritoneal Dialysis for Older People with End-Stage Renal Disease: The French and Danish Experience. Perit Dial Int, 2015. 35(6): p. 663-6.
38. Phirtskhalaishvili, T., et al., Spatial Analysis of Case-Mix and Dialysis Modality Associations. Perit Dial Int, 2016. 36(3): p. 326-33.
39. Bevilacqua, M.U., et al., Evaluation of a 12-Month Pilot of Long-Term and Temporary Assisted Peritoneal Dialysis. Perit Dial Int, 2017. 37(3): p. 307-313.
40. Duquennoy, S., et al., Is Peritonitis Risk Increased in Elderly Patients on Peritoneal Dialysis? Report from the French Language Peritoneal Dialysis Registry (RDPLF). Perit Dial Int, 2016. 36(3): p. 291-6.
41. Iyasere, O.U., et al., Quality of Life and Physical Function in Older Patients on Dialysis: A Comparison of Assisted Peritoneal Dialysis with Hemodialysis. Clin J Am Soc Nephrol, 2016. 11(3): p. 423-30.
42. Nadeau-Fredette, A.C., J.M. Bargman, and C.T. Chan, Clinical outcome of home hemodialysis in patients with previous peritoneal dialysis exposure: evaluation of the integrated home dialysis model. Perit Dial Int, 2015. 35(3): p. 316-23.
43. Nadeau-Fredette, A.C., et al., Predictors of Transfer to Home Hemodialysis after Peritoneal Dialysis Completion. Perit Dial Int, 2016. 36(5): p. 547-54.
44. McCormick, B.B. and C.T. Chan, Striving to Achieve an Integrated Home Dialysis System: A Report from the Ontario Renal Network Home Dialysis Attrition Task Force. Clin J Am Soc Nephrol, 2018. 13(3): p. 468-470.

https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

45. Elbokl, M.A., et al., Home-to-home dialysis transition: A 24-year single-centre experience. Perit Dial Int, 2022. 42(3): p. 324-327.
46. Verger C., Fabre E Transition between peritoneal dialysis and home hemodialysis in Belgium and France in the French Language Peritoneal Dialysis Registry (RDPLF). Bulletin de la Dialyse à Domicile, 2020. Volume 3: p. 169-176. https://doi.org/10.25796/bdd.v3i3.58393
47. Soucie, J.M. and W.M. McClellan, Early death in dialysis patients: risk factors and impact on incidence and mortality rates. J Am Soc Nephrol, 1996. 7(10): p. 2169-75.
48. Kansal, S.K., J.A. Morfin, and E.D. Weinhandl, Survival and Kidney Transplant Incidence on Home versus In-Center Hemodialysis, Following Peritoneal Dialysis Technique Failure. Perit Dial Int, 2019. 39(1): p. 25-34.
49. Wong, J.H., et al., The use of nocturnal home hemodialysis as salvage therapy for patients experiencing peritoneal dialysis failure. Perit Dial Int, 2007. 27(6): p. 669-74.
50. Suzuki, H., et al., New modality of dialysis therapy: peritoneal dialysis first and transition to home hemodialysis. Adv Perit Dial, 2012. 28: p. 106-11.
51. Blagg, C.R., et al., The history and rationale of daily and nightly hemodialysis. Contrib Nephrol, 2004. 145: p. 1-9.
52. Suri, R.S., et al., Daily hemodialysis: a systematic review. Clin J Am Soc Nephrol, 2006. 1(1): p. 33-42.
53. Achinger, S.G. and J.C. Ayus, The role of daily dialysis in the control of hyperphosphatemia. Kidney Int Suppl, 2005(95): p. S28-32.
54. Zaritsky, J., et al., Short daily hemodialysis is associated with lower plasma FGF23 levels when compared with conventional hemodialysis. Nephrol Dial Transplant, 2014. 29(2): p. 437-41.
55. Zimmerman, D.L., et al., Short daily versus conventional hemodialysis for hypertensive patients: a randomized cross-over study. PLoS One, 2014. 9(5): p. e97135.
56. Garg, A.X., et al., Patients receiving frequent hemodialysis have better health-related quality of life compared to patients receiving conventional hemodialysis. Kidney Int, 2017. 91(3): p. 746-754.
57. Hussein, W.F., P.N. Bennett, and B. Schiller, Innovations to Increase Home Hemodialysis Utilization: The Transitional Care Unit. Adv Chronic Kidney Dis, 2021. 28(2): p. 178-183.
58. Lanot, A., et al., Transitions between dialysis modalities. J Nephrol, 2022.
59. Lanot, A., et al., Assisted peritoneal dialysis and transfer to haemodialysis: a cause-specific analysis with data from the RDPLF. Nephrol Dial Transplant, 2021. 36(2): p. 330-339.
60. Boissinot, L., et al., Is transition between peritoneal dialysis and hemodialysis really a gradual process? Perit Dial Int, 2013. 33(4): p. 391-7.
61. Nezakatgoo, N., et al., Outcomes of Simultaneous Peritoneal Dialysis and Arteriovenous Fistula Placement in End-Stage Renal Disease Patients. Perit Dial Int, 2017. 37(6): p. 658-661.
62. Alizada, U., et al., Effect of emergency start and central venous catheter on outcomes in incident hemodialysis patients: a prospective observational cohort. J Nephrol, 2022. 35(3): p. 977-988.
63. Chen, J.H.C., et al., Association between causes of peritoneal dialysis technique failure and all-cause mortality. Sci Rep, 2018. 8(1): p. 3980.
64. Jiang, S.H., et al., Fistula use after concurrent arteriovenous fistula formation and Tenckhoff catheter insertion. Nephrology (Carlton), 2013. 18(1): p. 22-5.

*journal officiel du **Registre de Dialyse Péritonéale de Langue Française** **RDPLF** www.rdplf.org*

https://doi.org/10.25796/bdd.v4i4.69113
ISSN 2607-9917

65. Beckingham, I.J., et al., Are backup arteriovenous fistulae necessary for patients on continuous ambulatory peritoneal dialysis? Lancet, 1993. 341(8857): p. 1384-6.
66. Ferreira, H., et al., Planning Vascular Access in Peritoneal Dialysis-Defining High-Risk Patients. Perit Dial Int, 2018. 38(4): p. 271-277.