



KDIGO Controversies Conference on Home Dialysis Scope of Work

Kidney Disease: Improving Global Outcomes (KDIGO) is an international organization whose mission is to improve the care and outcomes of kidney disease patients worldwide by promoting coordination, collaboration, and integration of initiatives to develop and implement clinical practice guidelines. Periodically, KDIGO hosts conferences on topics of importance to patients with kidney disease. These conferences are designed to review the state of the art on a focused subject and set priorities for improving patient care and outcomes. In addition to highlighting areas for which additional research is needed, sometimes the conferences lead to KDIGO guideline development.

BACKGROUND AND RELEVANCE

In 2010, approximately 2.6 million people worldwide required kidney replacement therapy.¹ This staggering figure is especially alarming given that only half of persons in need of maintenance dialysis receive it, and those who lack access are largely within low- and middle-income countries (LMICs). Globally, the net burden of kidney disease is rising, and between 2010 and 2030 the population of patients receiving dialysis therapy is projected to double.¹

Home dialysis modalities, including home hemodialysis (HD) and peritoneal dialysis (PD), are associated with increased patient autonomy, improved patient satisfaction, and in some instances, lower costs relative to facility-based HD.²⁻⁷ In view of the current COVID-19 pandemic, there have even been reports of reduced COVID-19 infections and COVID-19 related deaths among home dialysis patients when compared with in-center dialysis patients.⁸ Despite mounting evidence regarding the benefits of home dialysis, its use worldwide remains low.

Although when HD was first developed it was predominantly undertaken at home, as the HD population has increased in age and extent of morbidities, in the United States in-center HD now accounts for greater than 80% of dialysis modalities.⁹ In many



countries, including several that are high-income, patients facing kidney failure have limited or no access to home HD.¹⁰

For PD, there has been substantial growth in its use among LMICs, suggesting it represents a promising, cost-effective strategy to maximize universal access to therapy for kidney failure.¹¹ Unfortunately, the rise in the use of PD among LMICs has been accompanied by a concomitant decline in PD use among many high-income countries, raising concerns about its perceived utility as a viable maintenance dialysis modality.¹¹ A recent international survey conducted on PD use and practice patterns revealed large inter- and intra-regional disparities on PD availability, accessibility, delivery, and reporting of quality outcome measures.¹²

Use and availability of home-based dialysis therapies result from a complex interplay of factors. These include, but may not be limited to: 1) differences in national healthcare policies and systems for dialysis delivery; 2) regional set costs for dialysis and relative costs of specific modalities; 3) dialysis reimbursement and payment structures, including financial incentives that bias use of one dialysis modality over another; and 4) local cultural factors that impact the perceived value of home- versus facility-based kidney replacement therapy by patients and providers.

There is a pressing need to develop and implement low-cost self-management dialysis and methods for evaluating its effectiveness, as well as mechanisms to ensure equitable access to home therapies irrespective of sociodemographic and socioeconomic status. Aligning any novel approaches with local and national health management policies for other chronic diseases is critical.

Recent policy and reimbursement reform for home dialysis has resulted in increased utilization in the United States.¹³ In the United Kingdom, the National Health Service has prioritized improving and boosting out-of-hospital care as well as developing more personalized care,¹⁴ illustrating the need for informed, thoughtful strategies for expanding home dialysis.

CONFERENCE OVERVIEW

In 2018, the first KDIGO dialysis Controversies Conference, *Dialysis Initiation, Modality Choice, Access, and Prescription*, cemented the understanding that choice of dialysis modality plays a central role in a person-centered and goal-directed approach to

initiating kidney replacement therapy. The second KDIGO dialysis Controversies Conference, held in 2019, addressed *Blood Pressure and Volume Management in Dialysis*, both of which are significantly, and variably, impacted by dialysis modality. This third meeting of the KDIGO dialysis Controversies Conference series will focus on home dialysis. Participants will conduct a critical, in-depth review of factors that either positively or negatively impact home dialysis utilization while considering individual and local factors that impact the use and outcomes associated with home dialysis. We will further identify approaches and strategies that expand the use of home dialysis, with consideration toward currently escalating costs associated with kidney failure. Moreover, we will explore factors that impact the patient and carer experience of home dialysis and the most effective support mechanisms that enable its use. Other factors under consideration will include the potential impacts of increasing home dialysis utilization on clinical and patient-reported outcomes, financial implications of costs of therapy for kidney failure, including patient and carer direct costs, and impact of increasing the use of home dialysis on increasing access to kidney replacement therapy.

Drs. Jeffrey Perl (St. Michael's Hospital, Unity Health, University of Toronto, Canada) and Martin Wilkie (Sheffield Teaching Hospitals NHS Foundation Trust, UK) will co-chair this conference. The format of the conference will involve topical plenary session presentations followed by focused discussion groups that will report back to the full group for consensus building. This highly interactive conference will invite key thought leaders and relevant stakeholders, including patients, in nephrology and other related disciplines who will comprehensively review the literature and current state of understanding in this area and address clinical issues as outlined in the **Appendix: Scope of Coverage**. The conference output will include publication of the summary proceedings that will help guide KDIGO and others on the optimal adoption and implementation of home-based dialysis therapies and future research in this area.

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APPENDIX: SCOPE OF COVERAGE

Breakout Group 1: Evidence-Based Outcomes Associated with Home Dialysis

- 1) Clinical outcomes of home dialysis by modality compared with facility-based hemodialysis:
 - a) Are there subgroups (sociodemographic/socioeconomic status/comorbid conditions) and/or geographic/regional factors that influence this comparison?
 - b) Are there specific benefits (e.g., cardiovascular) and harms in the context of the COVID-19 pandemic? Are there specific benefits and harms in the context of other disasters? Is home dialysis or in-center hemodialysis more appropriate during the COVID-19 pandemic in all countries? What are the advantages and disadvantages of each modality in different healthcare settings, taking into consideration timely access to dialysis, infection control requirements, and healthcare economics to the individual and the system?
- 2) Patient-reported outcomes, including quality of life and patient experience, by home dialysis modality compared with facility-based hemodialysis:
 - a) Are there subgroups (sociodemographic/socioeconomic status) and/or geographic/regional factors that influence this comparison?
 - b) Are there specific benefits (e.g., quality of life) and harms in the context of the COVID-19 pandemic? Are there specific benefits and harms in the context of other disasters?
- 3) What are the quality and performance metrics used to evaluate home dialysis programs?
- 4) What are the metrics to measure the incremental impact (benefits and adverse outcomes) as a result of the expanding use of home dialysis therapies?

Breakout Group 2: Facility-Level Factors That Impact Utilization of Home Dialysis

- 1) How should the training of health professionals be reorganized to enable home dialysis use?
 - a) What steps can be taken to minimize physician and healthcare team bias (all types: indication, selection, unconscious, unmeasured) in modality selection? Is there an agreed home-therapies policy within the center that all healthcare professionals can subscribe to? Is transplantation prioritized at the expense of home therapies?
 - b) How can home dialysis be embedded more consistently in professional training programs? Are the different roles and competencies of the multi-disciplinary team clear? Should training in home dialysis be a core part of the training of all center-based teams, and should this be different in academic centers versus non-academic, hub-and-spoke models or small centers? Should there be additional sub-specialized training in home dialysis?

- 2) How should the following aspects be best addressed to enable home dialysis use?
 - a) *Surveillance and support of patients at home*
 - i) What is the place of telemedicine? What is the place of home nurse visits? What is the place of general practitioners?
 - ii) What is the optimal way to provide support so that home patients can have access to in-center care when required for respite and other purposes?
 - iii) How can we ensure that home patients have access to alternative modalities as appropriate?
 - iv) How can support mechanisms be developed to build confidence among patient groups to encourage home dialysis?
 - v) What support mechanisms are in place to reduce attrition of home dialysis?
 - vi) What is the role of patient modality navigators/peer educators?
 - vii) How do we address problems associated with small center size?

 - b) *Education of patients treated at home.* The role of training center-based dialysis patients to learn aspects of their own care and the impact of this approach on uptake of home dialysis (shared hemodialysis care).
 - i) What is the place of expert patients (peer education)? What educational tools/methods should be used – e.g. videos, not-textual and well as text-

based approaches? How should their home installation be supported? How should continuing information be organized and disseminated? How has the pandemic impacted patient training for home dialysis?

- 3) In switching from in-center HD to home HD, what is the impact in terms of the organization?
 - a) What approaches in the delivery of in-center HD enable this switch?
 - b) How are home HD units best designed to integrate with hospital services to provide a program that can respond to this need and stimulate growth of home HD?
 - c) What are some alternative facility care models that best enable people from a poorer socioeconomic background to access home dialysis (e.g., community dialysis houses in New Zealand)?¹⁵

- 4) What are the best methods for anticipating and organizing task changes for health professionals?
 - a) What are the most appropriate working arrangements for care teams so that they bridge the gap between in-center and home?
 - b) Can patient training be conducted on the in-center unit to facilitate transfer to home?
 - c) Does rotation between home and in-center for health care professionals provide an advantage?
 - d) What are the additional changes in terms of program execution and work processes needed for a home dialysis program during a COVID-19 pandemic?



Breakout Group 3: Individual-Level Challenges That Impact Home Dialysis Utilization

Domain 1: Clinical and/or psychosocial barriers towards home dialysis adoption

1. Do absolute and relative contraindications for PD and home HD exist?
2. If there are only few absolute contraindications to home dialysis – is the notion of “home first” philosophy an achievable goal?
3. How does patient activation, health literacy, self-efficacy, and social support determine the candidacy of home dialysis?
4. What strategies can be used to enhance the confidence of people to make a choice of a home dialysis modality? What is the role of training patients to be more independent at dialysis centers?

Domain 2: Education and awareness of home dialysis

1. Which education pathways enhance uptake of home dialysis (how is it delivered and who delivers, what materials and when)?
2. How can support mechanisms be developed to build confidence among patient groups to encourage home dialysis?
3. Is there evidence that use of decision aids enhances the ability of patients, care partners, and close persons to make decisions about dialysis modality?
4. Why do people choose not to have home dialysis? Will this change in the COVID-19 era?
5. How should we individualize education and training of home dialysis (or is there a need to customize training)?
6. How has patient education and communication been impacted by the pandemic?
7. How do local cultural aspects influence education and awareness of home dialysis?

Domain 3: The advantages and challenges of caregiver assisted home dialysis

1. Does availability of assistance for dialysis (PD or HD) result in higher use of home dialysis?
2. There is a perception that home assisted dialysis is an effective form of kidney replacement therapy. How do we balance burden versus efficacy of



home assisted dialysis (especially in the context of caregiver-assisted home dialysis)?

3. Is there a role of standardization of caregiver-assisted home dialysis (including reimbursement)?
4. What is the role of respite and other forms of “back up support” for home dialysis?
5. What is the impact of home dialysis on the caregiver, and how can caregiver burden be best mitigated?

Domain 4: Mitigation of individual level barriers to home dialysis

1. What strategies (e.g., transitional units) are used to overcome identified barriers to home dialysis?
2. Will use of new devices (e.g., remote monitoring, portable dialysis equipment, etc.) increase home dialysis utilization? What is the patient experience of these devices?
3. Are there effective methods to enhance self-efficacy (e.g., rehab, exercise training, training patients in-center about treatment-related tasks)?
4. Are there innovative methods of training (e.g., cannulation, simulation) that may enhance home dialysis adoption?



Breakout Group 4: Financial and Policy Considerations That Impact Differences in Global Rates of Home Dialysis Utilization

Domain 1: Policy

1) Benefits, harms of home dialysis first and home dialysis preferred policies

2) Healthcare policies that either limit or expand the use of home dialysis

- Q1. What are the differences in dialysis access, healthcare economics/sustainability, and clinical outcomes with the transition to a home dialysis first or home dialysis preferred policy?
- a. Should each of these three components (dialysis access, healthcare economics/sustainability, and clinical outcomes) enjoy equal importance and weight when considering a home dialysis first or preferred policy?
 - b. Is patient preference or autonomy regarding dialysis modality an ethical consideration in a home dialysis first or preferred policy? How is a home dialysis first approach affected by local healthcare resources or COVID-19 transmission at dialysis centers?
- Q2. Are there liabilities or compromises made to patient care with the implementation of a home dialysis first or preferred policy?
- Q3. What are the obstacles to implementing or expanding a home dialysis first or preferred policy vis-à-vis infrastructure, supplies and home delivery, manpower, capacity building, and cultural considerations?
- a. Should in-center hemodialysis be deprioritized when implementing a home dialysis first or preferred policy?
 - b. Does availability of satellite hemodialysis and close proximity units disincentivize home dialysis?

Domain 2. Health Economics

1) Factors that impact modality-specific costs and strategies to reduce these costs

2) Costs directly to patients and care partners and impact of reimbursement of these costs



- Q4. Is home dialysis always more cost-effective than in-center hemodialysis in all countries/healthcare settings? What are the factors reducing the cost-effectiveness of a home dialysis first or preferred policy?
- Q5. What are the different financial reimbursement models for a home dialysis first or preferred policy? What are the advantages and disadvantages of each model and its impact on success and outcome of the program? How do these models impact patient-level experiences? How should advocacy to policy makers and large dialysis organizations/industry be made to implement the appropriate financial models for home dialysis?
- Q6. What are the direct and indirect costs to patients and care providers with a home dialysis program? Is there a role for direct patient grants to enable home dialysis? Should reimbursement be offered to caregivers/care partners to mitigate out-of-pocket expenses?
- Q7. What is the amount of cost savings (or a broader view of social return to investment) to the healthcare system required to show a home dialysis policy that is sustainable for all parties? Does societal willingness to pay for healthcare in each country impact the success of home first versus home preferred policies?

Domain 3. Obstacles

1) Impact of direct and indirect incentives for healthcare professionals

2) Collateral impact from financial, political, economic and infection control considerations to home dialysis initiation and maintenance during the COVID-19 outbreak

- Q8. Are incentives for healthcare professionals necessary or ethical/permissible for the success of a home dialysis program and/or a home dialysis first or preferred policy? If so, what are the effective components of an incentive model for healthcare professionals for program success and optimal program outcomes? How has physician or facility direct and indirect reimbursement differences for PD and HDD played out in various environments in terms of disincentivizing home dialysis?