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Letter to the Editor

Towards sustainable haemodialysis: From reflection to practice

Hacia una hemodiálisis sostenible: de la reflexión a la práctica

Mr. Director,

Following our recent publication in this journal, "Environmental challenges in hemodialysis: Exploring the path to sustainability",[1] in which we analyzed the environmental impact of this therapy and proposed lines of reflection toward a more sustainable practice, the aim of this letter is to perform one more step: to translate those ideas into concrete, simple and replicable proposals for nephrologists and hemodialysis professionals. Our purpose remains the same: to advance toward environmentally responsible renal care, always preserving the quality and safety of care.

The *Sustainable Kidney Care Toolkit,* developed by the *Center for Sustainable Healthcare* in the United Kingdom,[2] as well as the 10 tips presented by the Swiss Working Group on Sustainable Nephrology,[3] are examples of how to structure the transition toward more sustainable kidney care. Inspired by this approach, we propose a practical *checklist* to guide nephrologists on how to begin to introduce sustainable improvements. Several of these actions have demonstrated a significant environmental impact. For example, reducing dialysate flow to 300 ml/min in hemodialysis can save up to 50 l of water per session, which is equivalent to the emission of approximately 100 kg of CO_2 per patient per year, without affecting the dialysis dose.[4] Similarly, the implementation of shared or active transportation among health personnel can reduce the emissions associated with travel by 20%–30%, promoting healthy habits.[5]

Sustainable interventions in hemodialysis: a practical tool

Teaching all hemodialysis professionals how to make renal care less harmful to the environment is essential.[6] However, one of the main barriers to action is the lack of time in clinical practice. Therefore, practical and accessible tools that allow teams to begin implementing interventions immediately are needed (Table 1). The proposed *checklist* can be adapted according to the local context and prioritized according to available resources. Marked interventions do not require significant economic investment and can be implemented with minimal organizational changes.

On the other hand, to achieve "green" dialysis, it is essential to collect accurate information with defined indicators[10] that allow us to design action plans and thereby reduce the impact of dialysis therapy on the environment.[4,11,12] We present a set of key performance indicators that could be used in hemodialysis centers (Table 2).

Conclusion

In summary, sustainability in nephrology must cease to be an abstract concept; instead, it is urgent for sustainability to become a real practice, with the responsibility being shared among clinicians, managers, patients and providers. In the context of care overload and pressure due to immediacy, having simple and effective tools such as this *checklist* can facilitate change without adding an additional burden to the clinical team. The change begins with small individual gestures, is consolidated with conscious clinical decisions, and is

Table 1
Practical *checklist* to move toward a more sustainable practice in dialysis.

Personal actions (in my day to day)
☐ Use reusable bottles/cups
☐ Print only what is essential
☐ Turn off electronic devices and lights
☐ Use collective or active transportation (riding a bike, walking)
☐ Reduce email consumption (only "cc/bcc" and necessary attachments)
Clinical actions
☐ Promote/consider incremental hemodialysis[7]
☐ Organize scheduled start of dialysis and promote home dialysis
☐ Strengthen therapeutic adherence to avoid avoidable admissions
☐ Optimize adequate dry weight and minimize extra sessions
☐ Use digital tools for monitoring and education (avoid paper, reduce travel)
☐ Recommend a diet that is more plant-based and the consumption of locally grown food
☐ Consider reducing Qd to 400 ml/min as long as the dialysis dose is correct
☐ Optimize the prescription of HDF-OL[8]
☐ Reduce unnecessary/duplicate analyses[9]
☐ Use centralized acid concentrate, and if this is not possible, flexible bags (reduces transport and waste)
☐ Optimize the segregation of hazardous and nonhazardous waste in the dialysis room
Collective or educational actions
☐ Discuss the idea of sustainability in nephrology in a clinical session or coffee
☐ Suggest an "eco-session" or internal conference on sustainability
☐ Organize an annual "Green Dialysis Day" with educational and recreational activities
☐ Include a point on sustainability in a presentation you already have
☐ Identify an ally in your team who is interested in this issue
☐ Check whether there is recycling available in the dialysis room (and if the material is actually recycled)
☐ Install signs in the room to promote responsible behaviors (lights, water flow, recycling)
☐ Join or contact groups that are active in renal sustainability
☐ Include sustainability in onboarding programs for new staff

Qd: dialysis fluid flow; HDF-OL: online hemodiafiltration.

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Table 2
Key performance indicators for sustainability in hemodialysis.

Indicator	Guiding value	Frequency
Water consumption by HD treatment	350–400 l	Monthly
Water consumption by HDF treatment	450–500 l	Monthly
Electricity consumption by HD/HDF	12–15 kWh	Monthly
Hazardous waste generated by HD/HDF	1.00–1.2 kg	Monthly
Use of sustainable chemicals	50% green products	Annual
Reduction in plastics	10% in the first year, 5% in subsequent years	Annual
Reduction in printouts on paper	10% in the first year, 5% in subsequent years	Annual
% employees who use public transportation	25%	Annual
% employees who walk or use a bike	25%	Annual
% suppliers with environmental certification	50%	Annual

HD: hemodialysis; HDF: hemodiafiltration, l: liters; kWh: kilowatt hours; kg: kilograms.

multiplied by collective initiatives. We hope that this letter encourages other professionals to initiate or reinforce this path.

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