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Promoting Sustainable Kidney Health: The Asia-Pacific and Beyond

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Optimisation of Water Treatment in Haemodialysis Units for Water and Energy Savings

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Hemodialysis is heavily reliant on complex equipment, large volumes of water, high energy usage and a mix of recyclable and non-recyclable consumables. Strategies for reducing the enormous carbon footprint of hemodialysis include structural change such as dialysis unit design for reduced energy requirements, modern central water treatment plants, renewable energy sources, and engaging with carbon neutral providers. Decisions regarding such changes are often not in the remit of inidividual clinicians, however nephrologists do have the ability to significantly reduce resource use through a number of approaches. Ultrapure water production and heat sterilisartion of the dialysis loop and individual machines is highly energy intensive. However, scheduling for regular cleaning of the reverse osmosis unit, loop and machines is not often considered, especially when utilisation of dialysis chairs changes over time. There are minimum standards for heat treatment, and subsequent water quality. How this is achieved relies on a number of factors including the composition of incoming municipal water, heating system used, length of the dialysis loop, configuration of dialysis machines and their usage schedule,. Through better understanding of such factors, nephrologists are able to negotiate with their local administration, water engineers and dialysis service providers to tailor the timing of heat sterilisation and down times, to minimise reverse osmosis unit output, water heating, and use of chemical cleans. Significant water and energy savings can be made without any change in infrastructure, or additional cost.

Keywords: Green Nephrology, Hemodialysis, Water Treatment, Energy saving, Carbon footprint