



## A novel way to re-use reverse osmosis reject water

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For the fledgling few with an eye to the role that nephrology can and must play in global climate and resource management [1, 2], the paper by Chang et al. [3] in this issue offers another small step forward in this long-ignored space. It is a welcome addition to the limited range of other papers written about the opportunities that exist for resource conservation in dialysis practice [4–6], gainful recycling and/or re-use of dialysis's discard products [5, 7], and the formulation of national guidelines for environmental sustainability in nephrology [8].

A fitting paraphrase of the conclusion to the study from Chang and co-authors might be: "... environmental practices in haemodialysis units *can* be accomplished through relatively simple and practical steps". Chang et al. describe their experience of redirecting RO reject water to fish tanks, aquaponics plots and land-based plants instead of to the drain. All that was required for set-up was the installation of a storage tank, pipes and some pumps to move the water, yet the project saves an estimated 10,000–12,000L high quality water *daily*. Its end products—multi-variety vegetables and fish species—are impressive. Cost/benefit analysis comes close to a break-even balance, with US dollar comparisons suggesting a total outlay of ~US\$1,650 [infrastructure ~US\$1,215 and water tariffs ~US\$440] and revenue benefits of ~\$1,460, [reduced discarded water ~US\$610 and on-sale of aquaponic and hydroponic products ~US\$850]. Perhaps most importantly, the authors describe the incalculable benefits of a new, shared sense of purpose and pride from the project among dialysis patients and staff.

The authors are to be congratulated for their lateral-thinking and ability to see beyond the narrow confines of

everyday dialysis practice. Their project exemplifies the broad benefits that can flow from this.

Their project is clearly space-demanding—a potential complicating factor for many established suburban services when it comes to replicating it. The plant and fish care and managerial requirements may also present challenges for some, although with brought-in aquaponics and hydroponics expertise, it still seems a project within the reach of many modest-sized dialysis services.

Most dialysis services still pay scant regard for RO system discard volumes and thoughtlessly direct all RO reject water to the drain. While newer RO systems do now increasingly offer internalised recirculation—unheard of 1–2 decades ago—this does not change the fact that highly significant water volumes are still wasted. As water scarcity grows the world over, the need for innovative on-uses for RO reject water has never been more pressing [8].

Report after report from the United Nations Intergovernmental Panel on Climate Change has pointed an accusatory finger at the wilful daily disregard shown by the majority of human endeavours towards our warming climate [9]. Similarly, we have been told in the clearest of terms that unless we slow our relentless consumption of our planet's finite resources, a time will soon come when our planet can sustain us no more. Regarding healthcare, while we broadly excel at the front end of delivery (retrieval, emergency care, acute in-hospital management, surgical technique, and all the other trappings of twenty-first century medicine), the back end of care (resource consumption, carbon emissions, waste disposal, re-use and recycling) is still largely ignored. Climate change has been identified as the greatest human health threat of the twenty-first century. Yet ironically, if the global healthcare sector were a country, it would be the fifth-largest greenhouse gas emitter on the planet. To date, and to its shame, global healthcare—charged as it is with the task of improving global health and well-being—scores an F-minus in its duty of care for the environment. In our own niche of dialysis, the wanton discard for our environmental impact—through our use of boundless amounts of water and

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power and generation and daily discard of mountains of solid [mainly plastic] waste—is simply unconscionable.

Our twenty-first century throw-away society, dulled by ‘use-by dates’ and seduced by ‘planned obsolescence’, is now so used to seeking what’s ‘new’, that we neglect the smart use and/or repurposing of the discarded ‘old’. The ease of landfill or polluting incineration has blind-sided us to the mess we leave behind. It is past time we paid attention to cleaning up our act.

Chang et al. provide us with a refreshing pointer to how we might achieve that redress, triple-tagging environmental benefit with a contribution to global nutrition and an improved, more holistic dialysis experience. Well done.

### Compliance with ethical standards

**Conflict of interest** There are no conflicts of interest for either author.

**Ethical approval** This article does not contain any studies with human participants performed by any of the authors.

**Informed consent** For this type of study formal consent is not required.

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