



Environmental Sustainability and Renal Care

Position Statement

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About this Position Statement

This is a joint Position Statement from the Australia New Zealand Society of Nephrology (ANZSN), the Renal Society of Australasia (RSA) and Kidney Health Australia (KHA), compiled by the Green Nephrology Action Team (GNAT), a working group of the Australia and New Zealand Society of Nephrology.

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1.0 Opening statement

Climate change, resource consumption and waste management are issues that impact us all, and as a medical community we have a duty of care to protect and promote a safe and healthy environment. Health service delivery, in particular dialysis, is resource intensive and produces considerable waste. The Green Nephrology Action Team (GNAT) has been formed as a working group of the ANZSN, in partnership with RSA and KHA, recognising that urgent action is needed within the nephrology community to help minimise the impacts of climate change, sustainably manage natural resources, and reduce and manage waste. We aim to create an enduring coalition of doctors, nurses, scientists, technicians and patients, who through research, individual actions, systems improvement and advocacy will work together towards environmentally sustainable nephrology in Australia and New Zealand.

2.0 Goals and Actions

Goals	Practical Actions
Create awareness within the nephrology community about the impact of nephrology practice on climate change	<ol style="list-style-type: none"> 1) Present an educational session on environmental issues in nephrology at ANZSN update course in 2017 2) Advocate for a dedicated presentation session on environmental issues for ANZSN/RSA annual meetings in 2018 3) Identify an environmental champion at every renal unit and create a contact list for future dissemination of information and community engagement 4) Explore funding opportunities to support a Green Nephrology Fellow who would be responsible for expanding and offering support to renal unit environmental champions
Encourage and enable research on environmental impacts and sustainable practice in nephrology	<ol style="list-style-type: none"> 1) Establish research prizes to be awarded at ANZSN and RSA annual meetings, recognising research in the area of environmental sustainability. 2) Develop and distribute a list of suggested research projects to doctors, nurses, medical trainees and other members of the renal community
Support individuals and groups to enact changes in clinical practice to improve environmental sustainability (e.g. measures that	<ol style="list-style-type: none"> 1) Promote awareness of existing resources (Roadmap for Greener Dialysis, European Guidelines etc.) among clinicians, nurses and patients

reduce energy consumption or waste production)	2) Facilitate public recognition of individuals and units enacting positive change 3) Foster social media networks (e.g. Facebook/Twitter) for staff and patients to share ideas on environmentally sustainable practice
Advocate for policy interventions within units, health services, professional societies, industry and government that reduce negative environment impacts	1) Develop formal policies within ANZSN and partner associations to encourage environmentally sustainability 2) Respond to policy changes and media reports that relate to environmental issues in nephrology 3) Provide information and resources to groups advocating for policy changes within their unit/health service

3.0 Background

3.1 Nephrology practice has a high environmental impact

The healthcare industry, together with its supply chain, contributes significantly to greenhouse gas emissions and natural resource depletion ¹. Dialysis programs have a particularly large carbon footprint, with a recurrent, per capita resource consumption and waste generation profile that is second to none in healthcare ². The environmental price of this is high, with an Australian study showing the annual per patient carbon footprint of satellite conventional haemodialysis to be 10.2 tonnes CO₂-equivalents (t CO₂-eq), which is more than half the Australian mean annual per capita CO₂ emission estimate of 18.8 t CO₂-eq ³. The financial price is also high, with the cost of treating end-stage kidney disease over the period 2009 to 2020 estimated to be around \$12 billion to the Australian Government ⁴.

3.2 Climate change will increase the burden of renal disease

Climate change occurring as a result of human activity will have potentially devastating effects on health and has been identified as the greatest global health threat of the 21st century ⁵. These health effects will be broad and disproportionately impact vulnerable populations. In addition, climate change is likely to directly increase the burden of renal disease. Multiple studies have reported increases in hospital admissions from AKI during heat waves ⁶⁻¹⁰ which are predicted to become more frequent, severe and persistent in a future warmer climate ¹¹. Poor access to clean drinking water combined with prolonged exposure to high temperatures, causing cyclical dehydration, has been recognized as a probable contributor to the epidemics of CKD reported in Mesoamerica and Sri Lanka ¹². Higher mean annual temperatures and increasing numbers of extreme heat days promote nephrolithiasis: the current rate of rise in temperature will probably result in an increase of 2 million lifetime cases of stone disease in the USA by 2050 ¹³. Flooding will become more common as the climate warms ¹¹; this, with warmer temperatures, is likely to increase diarrhoeal illness and vector borne disease spread, both major causes of AKI in low-income regions ¹⁴⁻¹⁶.

In addition, climate change is likely to have a destabilizing impact on the provision of health care to patients with kidney disease. Extreme weather events (including floods, cyclones, ice storms and snow storms) will disrupt the supply of clean water and power for haemodialysis, and also the transport of supplies for, and patient access to, haemodialysis and peritoneal dialysis ^{17,18}.

3.3 Environmentally sustainable practice can deliver broad benefits

Fortunately, the changes needed to improve environmental sustainability in healthcare overlap considerably with those needed to deliver financial sustainability and quality improvements, entailing efficiency driven by evidence based practices and judicious use of resources. International experience has demonstrated broad benefits of environmental initiatives within the nephrology sector. In the UK, a Green Nephrology (GN) Network was established in 2009 within the National Health Service Sustainable Healthcare Programme ¹⁹ and has led to both attitude and practice change, including the introduction of widespread dialysis water recycling, retrofitting of heat exchangers into dialysis systems, advanced recycling and telemedicine to reduce travel-related emissions ²⁰. The GN Network has estimated potential annual savings in the order of 470 million litres of water, 11,000 t CO₂-eq of greenhouse gases and £7 million from GN innovations, and predicted savings approaching £1 billion/year 'if the enthusiasm and focused work of the kidney community (were to) spread across the whole NHS' ²¹. Importantly, the UK and other international groups have also reported improved efficiency, a common sense of purpose and higher patient and staff morale within units from GN initiatives ^{2,22,23}. These have come at zero-cost or net benefit to patient care.

4.0 Action now

4.1 Promoting awareness

The sustained action needed to address the environmental impacts of nephrology practice requires a broad coalition of individuals and health services who recognize the importance of this challenge and are motivated to work together to enact change. It is therefore a key priority of the GNAT to identify environmental champions within dialysis units and health services and establish a network for creating awareness, disseminating information and encouraging practical change. The GNAT will develop education programs to be presented at both medical and nursing national conferences to provide further education and promote awareness.

4.2 Encouraging research and innovation

Additional research is needed to better understand the broader environmental impacts of nephrology practice and investigate the most effective and efficient methods of mitigating these. The GNAT will work to establish research prizes that encourage investigators to advance the evidence base, and collate and disseminate project ideas to stimulate work in this area.

4.3 Supporting local change

It is vital to engage patients and the broader community in the challenge of working towards more environmentally sustainable practice. The GNAT will develop systems to encourage and publicly recognise actions taken at a local level that work towards this goal. Considerable work has been done already to develop practical guides for dialysis units to improve sustainable practice, however, work is needed to disseminate this information and engage individuals and units. The GNAT recognizes the power of online platforms and social media in enacting change and will utilise these tools to support positive action.

4.4 Advocating for systemic change

Many of the most significant environmental impacts of nephrology practice are related to unit, health service, government and industry practice that may be beyond the influence of individual actions. As a coalition of professionals and consumer stakeholders, the GNAT will publicly advocate for systemic changes that promote environmental sustainability and provide feedback to ANZSN and partner organisation on policy interventions and media reports relevant to this area. By collecting and disseminating evidence and resources, we will help enable individuals and groups to advocate for change within their local health services.

5.0 Barriers to change

5.1 Apathy and disillusionment

The scale of environmental issues facing the world in the 21st century can often lead to a sense of disillusionment about the impact of individual actions, or apathy in those who find the challenge overwhelming or prefer to ignore it all together. The GNAT will work to overcome these barriers through education, by increasing awareness of the evidence behind the environmental consequences of nephrology practice and, most importantly, by fostering the development of communities to support and encourage individual actions.

5.2 Financial and time costs

Well planned interventions to improve environmental sustainability can often be cost neutral or cost saving. Those that are deemed to be cost negative often fail to consider the external costs of environmental destruction or pollution. By encouraging research and celebrating innovation, the GNAT aims to promote the financial benefits of environmentally sustainable practice.

5.3 Competing priorities

Environmentally sustainable practice should not come as a burden to individuals and health services. Through promoting evidence based change and encouraging increased efficiency,

the GNAT aims to demonstrate the potential broad benefits of environmentally sustainable nephrology.

6.0 Getting involved

The GNAT encourages anyone interested in becoming a local environmental champion, undertaking research in the environmental impacts of nephrology or who is seeking more information to contact us directly at: anzsn@nephrology.edu.au

7.0 Resources

- Green Dialysis (Australian resources)
 - <https://www.greendialysis.org>
- Green Nephrology (UK network)
 - <http://networks.sustainablehealthcare.org.uk/network/green-nephrology>
- Cases studies compiled by the Green Nephrology Network
 - <http://map.sustainablehealthcare.org.uk/green-nephrology-projects>
- Environmental Guidelines for Dialysis, A Practical Guide to Reduce the Environmental Burden of Dialysis (EDTNA/ERCA handbook)
 - <http://www.edtnaerca.org/pages/education/publications.php>

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