Suggestions for Environmental Sustainability Research Projects

- Baseline practice and attitudes towards green nephrology
  - Replicate the Victorian ESSIG (Environmental Sustainability Special Interest Group) Green Nephrology survey in other states and territories in ANZ to establish a national picture of baseline environmental practice
  - Examine the attitudes of renal patients towards environmental sustainability in renal care delivery

- Carbon footprint
  - Extend the carbon footprint of dialysis research pioneered in Geelong (see https://www.ncbi.nlm.nih.gov/pubmed/23731962)
  - Determine the carbon footprint of PD in Australia with the different PD modalities and treatment regimens

- Waste
  - Accurately classify the waste components of dialysis waste (HD and PD) by plastic type
  - Establish weight and volume of waste generated per treatment for the different machines and consumables used (HD and PD)
  - Determine the potential (or otherwise) for recycling or reuse of waste

- RO reject water reuse
  - Evaluate water quality from a variety of RO systems (home and facility; newer vs. older systems) – i.e. is all RO reject water the same?
  - Establish limits for suitability for re-use
    - Potentials here might include things like reject water (RW) chemical analyses: Is all RW the same? What ‘level’ of RW re-use (potable uses, animal use, cleaning use) might RW be suited for?
  - Determine the potentials for R/O reject water (RW) re-use – both in the home and at/near your facility
    - Who nearby, or what industry, facility, business etc. might benefit from access to your RW?
• Is your inpatient facility R/O RW near wards, or areas where simple plumbing might allow access for toilet flushing, floor mopping, garden use, sterilizer steam generation in sterilizing departments, autoclave water, even re-presentation circuiting back to the R/O (see schematic diagram ... Agar et al. Hemodialysis International 13(1):32-37, January 2009).

• Energy usage
  o Measure the power draw of a variety of home and facility systems, machines, ROs etc.
  o Explore of the potential for solar to offset the energy used and energy costs paid for haemodialysis with currently available PV systems and feed in tariffs

• Assess the impact of SteriMed or a similar waste processing machine on dialysis waste volume and cost; explore opportunities for reuse of the sterile end product

• Telemedicine
  o Investigate the utility of telemedicine for follow up renal patients

• ‘Apps’
  o While ‘Apps’ are ubiquitous in other fields, the iPhone or iPad Apps search function yields surprisingly few useful educational, management or communication apps in dialysis or renal medicine. There is significant room for the development of apps that improve unit-with-home-patient communication, lessen travel, reduce paper record warfare, and strengthen home patient education and support.

• Miscellaneous
  o Repeat previously performed light exposure/oxidative stress research (see https://www.ncbi.nlm.nih.gov/pubmed/16306109); if previously obtained results are confirmed, then examine the relative oxidative stress exerted on extracorporeal blood by exposure to various light wavelengths: fluorescent, tungsten, LEDs etc.
o Reusing caps etc for innovative purposes ... see amazing work by a nurse from Toronto General @ the safe video site below ...

https://www.facebook.com/torontostar/videos/10155336411601151/