



Improving a hospital's environment impact: what can a doctor do?

A practical guide to achieving change...

As health professionals we have a duty of care to firstly 'do no harm' and to advocate for action to protect health and humanity, yet our workplaces (particularly hospitals) may significantly contribute to an unhealthy ecological footprint. This document aims to encourage and guide doctors to help healthcare colleagues move towards greater environmental sustainability.

Hospitals spend vast quantities of money and have significant environmental footprints. Over 7% of Australia's total carbon footprint is generated by our health care system¹ with hospitals responsible for 44% of these emissions. Fortunately, many of the changes needed to improve environmental sustainability within healthcare are the same as those needed to deliver financial sustainability, and improvements in quality, safety and resilience. Promoting resource and waste efficiency, preventing avoidable activity, focusing on value and cost-effectiveness, and placing greater emphasis on public health, preventive medicine and primary care, will lead to improved patient, environmental, financial and healthcare quality outcomes..

To initiate change within large highly structured organisations such as hospitals is not easy, as such some suggestions in this guide may seem trivial. This document therefore aims to identify areas where change can most easily be initiated to improve a hospital's environmental impact, whilst appreciating that each suggestion offered here requires time and effort to be successfully implemented.

1. Investigate the degree of environmental sustainability activity occurring within the hospital.

- i. **Is there a hospital sustainability (environmental) officer and/or committee?** If so, meet with the sustainability officer and discover what has been achieved, what is currently a priority and future plans. From experience, **the sustainability officer is the most important person in the hospital who can improve hospital sustainability.** If there is no sustainability officer consider how to instigate the employment of one. Within reason, a hospital has a choice about how it spends its money for the 'activities' it performs. Factors which augment the possibility of hiring an officer are engaging the hospital CEO and/or Board, obtaining the support of senior medical and nursing staff, investigating the Australian state and federal based reporting requirements for energy, water and waste data (which may be performed by expensive external consultants in lieu of the sustainability officer).

- ii. **Ask to attend the hospital sustainability committee** to discover the terms of reference, plans, integral people and inevitable frustrations. These committees are often very pleased to have medical input.
- iii. **Engage hospital executive/ administrators.** Identify if the hospital environmental sustainability committee has a hospital executive present and if not, suggest and encourage this to occur, as from experience we know this is vital to raising the profile and ultimate success of hospital programs to improve environmental sustainability.
- iv. **Meet with the hospital engineers and waste managers.** There may be plans already underway or projects identified that could save money and improve environmental impacts.
- v. **Find out if any audits of resource consumption or waste management** have already occurred? Have these audits been acted upon?
- vi. **Benchmark** what is happening in other hospitals to improve environmental sustainability.
- vii. **Discover what the state government may be doing** to improve the energy and water consumption of hospitals. There may be time critical grants or procurement programs that could be considered to improve environmental impacts. Engage with state departments of health to ascertain if there is a sustainability group who could assist you.

2. Waste management

Start with a project that is likely to succeed. Build on experience and networks for further initiatives. Waste management is an area where changes can be visualised and improving practice has potentially large environmental and financial gains. The mantra 'Reduce, Reuse, Recycle' is often used to encourage improved environmental footprints – though when it comes to waste management, improved segregation should be put first.

- i. **Segregate** infectious and general waste well (infectious waste is far more expensive to dispose of and required extensive processing). Surprisingly few clinical areas within hospitals do this well although there are significant cost and environmental savings and it is potentially the easiest change, as no new systems/ waste streams need to be altered or introduced.
- ii. **Recycle**– paper, cardboard, plastic, glass, batteries. Find out what the present waste contractor is willing to recycle.
- iii. **Compost** food waste.
- iv. **Reduce single-use products where possible** - consider re-usable equipment and ways to minimise equipment use. There are increasing publications of Life Cycle Assessments in relation to single use and reusable medical equipment. The environmental and financial implications are potentially very significant.
- v. Purchase recycled paper and change printer default settings to double sided printing.
- vi. Promote ideas to discourage the use of disposable cups within your hospital.

3. Recycle

Although recycling is a small part of the big picture of sustainability, it can often be a great 'hook' (the first tangible project) to subsequently enlist staff in further sustainability initiatives.

Involve staff whom are keen to assist or even lead in particular wards. Consider starting in the hospital's operating suite, Intensive Care Unit (ICU) and office areas. Identify what can readily be recycled. Be aware that recycling does not in itself save the hospital much money, but **can indirectly reduce the amount of inappropriate and costly infectious waste**. If your hospital is remote from major recycling centres it may even cost the hospital to recycle, so focus upon reusing and reducing.

- i. **Paper/cardboard** are easily recycled, though plastics can be more challenging and PVC needs to be separated.
- ii. **Comingled recycling** (where multiple recycling streams can be put into the one receptacle) is possible and does occur in some hospitals.
- iii. **Theatre 'blue wrap' (polypropylene)** is valuable to recyclers as it has an intrinsically high value and is rarely contaminated.
- iv. **PVC plastic** can be recycled and the Vinyl Council of Australia is actively seeking to expand such PVC recycling (<http://www.vinyl.org.au/pvc-in-healthcare-2/pvc-recycling-in-hospitals>).²

Details of how best to recycle are beyond the scope of this guide, although seeking advice from sustainability officers in other hospitals is suggested. Contamination of recycling streams with infectious waste can be problematic initially, and arrangements with recyclers about what to do if this occurs are integral, e.g. the hospital may agree to pay for removing infectious waste bins from the recycler. "If in doubt, chuck it out" is helpful in facilitating feasible rates of recycling, rather than trying to achieve 100% of all recyclable products.

- v. **Procure recycled / environmentally friendly products.**

It is important to consider how the purchasing of products can help support the recycling processes and reward companies that are producing products with less environmental impact.

4. Reduce

- i. **Avoiding unnecessary patient procedures/investigations/activities** is an important part of decreasing a hospital's environmental footprint and improving sustainability.
- ii. In non-clinical areas (even on wards) it is possible to set computers and air conditioners **to stand by out of hours**, convert photocopiers to **double-sided** - avoid printing in general.
- iii. Hospital staff can choose to **reduce the use of unnecessary equipment** (e.g. equipment that is opened and not used) on a daily basis, which is particularly pertinent in hospital interventional areas. Senior medical officers should aim to lead by example in influencing the practices of more junior medical and nursing staff. Junior staff though should be questioning the validity of certain practices that may seem to generate unnecessary waste and use of resources.
- iv. There are a number of areas where it is relatively easy to reduce: in **critical care areas and the operating suite** avoid opening equipment unless it is absolutely necessary, resist drawing up emergency drugs as standard practice, use fewer syringes for individual patients, use low flow anaesthetic gases, and avoid the two anaesthetic gases with high global warming potentials- desflurane and nitrous oxide.

- v. **Energy consumption** – particularly for areas not in continuous use (weekends/nights). Whilst not straight forward it may be possible to reduce the large energy consumption of multiple areas of the hospital, such as clinical areas when not in use. Enlisting the hospital engineers is crucial. Many operating rooms, for example, are not turned to low activity for air conditioning out of hours, though this saves tens of thousands of dollars per annum for each operating theatre by considerably reducing electricity and gas consumption. All new hospitals should have Variable Speed Drives to turn down theatre ventilation when not in use, whilst older hospitals can be retrofitted with VSDs. (routinely with a short payback time).
- vi. **Water consumption** - Consider what has been done to reduce the water consumption of the hospital with the engineers. Often simple, though useful water audits have already been performed.

5. Reuse

Life cycle assessment ('cradle to grave') is a method used to calculate the environmental footprint of processes and products, and increasingly is being used in healthcare.³ There is a growing body of evidence indicating that reusing hospital equipment where possible rather than purchasing single use items can have both financial and environmental benefits. Decisions to use single use items are often the result of marketing campaigns rather than evidence based. Ask for the evidence supporting healthcare purchasing decisions, particularly if infection control issues are used as a reason (frequently without evidence) to increase the amount of single use products.

Published evidence indicates that reusable equipment is beneficial compared with single use equipment both financially and environmentally for all anaesthetic equipment (laryngoscopes, face masks, anaesthetic circuits etc.) the outer coverings of suction canisters, and several surgical laparoscopic instruments. There are little data for most other areas of medicine.

6. Research

Certain hospital environmental sustainability areas have been well researched, e.g. hospital environmental design and architecture. Yet how to best improve the environmental (and financial) footprint of activities within a hospital is usually opaque. Every area of medicine has an environmental impact, from the environmental footprint of medication production and packaging, to the energy use of the radiology department. Unfortunately, however most detail is simply unknown as it has not been researched...

7. Advocate

Advocate at all levels; hospital executive; sustainability committee; amongst your peers; amongst nurses and other doctors. Join with other DEA members to collaborate and consider a movement to raise the hospital renewable energy use, encourage health superannuation funds to divest from non-renewable energy sources, improve hospital teleconferencing, meet with state Department of Health staff to consider how to improve hospital financial and environmental sustainability, advocate within your college/society to be more environmentally sustainable.

Useful Websites

1. The Sustainable Development Unit UK. Available at <https://www.sduhealth.org.uk/>.
2. Victorian Department of Health, Sustainability in Healthcare. Available at <https://www2.health.vic.gov.au/hospitals-and-health-services/planning-infrastructure/sustainability>
3. Health Care Without Harm. HCWH. Leading the global movement for environmentally responsible healthcare. Available at <http://noharm.org>
4. The related group 'Global Green and Healthy Hospitals' (US based), available at <https://www.greenhospitals.net>
5. Australian networks available at http://www.caha.org.au/globalgreen_healthyhospitals
6. Centre for Sustainable Healthcare UK. Available at <http://sustainablehealthcare.org.uk>
5. DEA Sustainable Hospitals – Response to the Victorian Climate Change Green Paper, 2011. Available at <https://www.dea.org.au/sustainable-hospitals-response-to-victorian-climate-change-green-paper-healthy-planet-healthy-people-dea/>

1. Malik A, Lenzen M, McAlister S, McGain F. The carbon footprint of Australian health care. *The Lancet Planetary Health* 2018; 2(1): e27-e35.
2. The Vinyl Council of Australia. PVC Recovery in Hospitals. 2012. <http://vinyl.org.au/about-pvc/pvc-products/pvc-in-healthcare/pvc-recovery-in-hospitals>.
3. McGain F, Story D, Kayak E, Kashima Y, McAlister S. Workplace sustainability: the "cradle to grave" view of what we do. *Anesthesia and Analgesia* 2012; 114(5): 1134-9.