Spearheading sustainable practices for a greener healthcare ecosystem

NUH is shaping the future of green healthcare in a series of sustainable initiatives throughout the hospital.

Issue 6 | September 2024



Climate change and healthcare are inextricably interwoven. A warming planet <u>exacerbates zoonotic threats</u>. At the same time, increasingly severe and frequent weather events strain and amplify the vulnerability of healthcare systems.

The healthcare sector itself is a significant contributor to the emissions driving climate change. It is estimated that healthcare systems account for nearly 10 per cent of national greenhouse-gas emissions — <u>more than the aviation or shipping industries</u>. If the global healthcare sector were a country, it would be the <u>fifth largest polluter</u> on the planet.

On the flip side, within this daunting challenge lies enormous opportunity. Improving various facets of hospital operations can not only reduce emissions, but also improve public health and boost the resilience of the sector, especially in the face of a warming world.

The National University Hospital (NUH) is implementing a range of initiatives to reduce its carbon footprint, extending its responsibility beyond patient care to consider its impact on the wider community.

Cutting food waste

Patients were often observed to have excess food, particularly rice, that goes to waste. Working with dietitians, NUH reduced the standard carbohydrate portions for patients without special dietary needs.

This adjustment has decreased food waste by almost 2,000 kilograms of rice annually, while maintaining nutritional standards. For those requiring more, additional carbohydrates are readily available upon request.

Drastically reducing greenhouse gases

Certain chemicals used in hospitals have a disproportionately high global warming potential (GWP) — a measure of how much heat a greenhouse gas traps in the atmosphere compared to carbon dioxide.

Desflurane, a common general anaesthetic used in almost every operating theatre, is one such chemical, with a GWP nearly 2,500 greater than carbon dioxide. To curb its usage, NUH started a quality improvement project in 2021, placing reminders on vapourisers, as well as raising awareness among anaesthetists about the environmental impact of the chemical. This saw a 98 per cent decrease in the use of desflurane over the past three years, equivalent to taking about 400 cars off the road every year.

<u>Dr Poh Pei Kee</u>, Consultant, <u>Department of Anaesthesia</u>, NUH, advocated for the use of environmentally friendly alternative anaesthetic agents, while ensuring patient safety. He was recognised by the National Environmental Agency (NEA) for his efforts with the EcoFriend Award 2024 in the Public Sector category.

Learn more about the other green initiatives spearheaded by Dr Poh: https://for.sg/16th-ecofriend-awards

Optimising energy use

Operating theatres (OTs) are the most energy-intensive services in the hospital to their strict requirements for temperature, humidity, pressure and air quality. To reduce its energy demand, NUH ran a pilot project in 2022 to optimise the ventilation systems in older OTs, as suggested by international guidelines. The results demonstrated a 40 per cent reduction in energy use in these older OTs.

Following the success of the pilot, the protocol was rolled out to 29 OTs at NUH in 2023, leading to a reduction in energy consumption without compromising safety.

Separation for conservation

In the kitchens of NUH, food waste is separated from general waste and broken down by enzymes in a digestor. This process diverts 11–15 tonnes of food waste from incineration each month — significantly reducing the hospital's carbon footprint.

Plastic-lite revolution

Pharmacies at NUH are phasing out small plastic bags, as patients are encouraged to bring reusable bags for prescription collections. This helps reduce up to 480,000 plastic bags annually. Retail tenants are also playing their part to reduce plastic bag usage.

Paving the way for recycling single-use plastics

Single-use plastics are ubiquitous in medical settings due to their necessity for hygiene and safety. NUH produced 4.5 million kilograms of waste in 2022, much of which stems from single-use plastic.

In partnership with a Singapore-based startup, NUH has embarked on recycling polyvinyl chloride (PVC) waste into NEWBitumen, an alternative to conventional fossil-fuel-derived bitumen used to pave roads. This initiative has successfully repurposed non-recyclable plastics, such as syringes, surgical packaging and personal protective equipment, into material for paving roads in areas around NUH.

Giving used IV fluid bags a new lease of life

NUH launched an initiative to <u>recycle intravenous (IV) fluid bags</u>. These bags, used for keeping patients hydrated, managing their blood pressure and administering necessary medication or nutrients, generate about 24 tonnes of waste annually.

Since the programme's inception in November 2022, NUH has recycled almost 3,000 kilograms of PVC waste, repurposing them into everyday items like plastic bags, cable covers and garden hoses.