

TTSH Drives Nationwide Shift to Recyclable Medication Boxes

Pharmacist-led innovation enables recycling of more than four million medication boxes annually across public healthcare institutions

Singapore, 22 April 2026 – Tan Tock Seng Hospital (TTSH), the flagship hospital of NHG Health, is advancing sustainable healthcare at scale with a pharmacist-led innovation that will transform medication packaging across Singapore’s public healthcare system. This initiative is expected to make more than four million medication boxes recyclable each year by households.

Announced at TTSH’s Earth Day 2026 event, the initiative marks the first coordinated sustainability effort of its kind across all three public healthcare clusters. It reinforces the NHG Health cluster’s commitment to greener care and better health outcomes for the population.

The event was officiated by Dr Janil Puthuchery, Senior Minister of State, Ministry of Sustainability and the Environment.

Scaling Sustainable Pharmacy Practices Nationwide

Across Singapore's public healthcare institutions, millions of medication boxes are dispensed annually, many of which cannot be recycled due to their mixed-material design. These boxes are traditionally made of paper combined with a plastic viewing window, rendering them unsuitable for recycling. At TTSH alone, tens of thousands of such boxes are dispensed monthly.

To address this, TTSH’s pharmacists redesigned the packaging into a single-material paper box, removing the plastic component while preserving its durability and compatibility with automated pharmacy-dispensing systems. The new box design meets the National Environment Agency (NEA)'s criteria for recycling. This means patients can dispose the box conveniently in the blue recycling bins located in housing estates and public spaces.

The redesigned boxes will be progressively adopted across public hospitals and polyclinics, starting with TTSH in April 2026. This marks a system-wide shift in how medication packaging is managed. If returned appropriately by patients, an estimated 4.36 million boxes could be recycled annually, reducing carbon emissions by 4,592 kg or roughly 24 round trips between Singapore and Bangkok¹. The initiative also eliminates the use of about 1,837 kg of plastic each year, equivalent to 122,000 plastic bottles.

¹ Calculated using the [ICAO Carbon Emissions Calculator](https://www.icao.int/icaoinfo/development/carbon_calculator/) (icao.int, v13.1, August 2024).

Professor Joe Sim, Group Chief Executive Officer, NHG Health, said: “Our responsibility goes beyond delivering excellent patient care. We must also do our part in ensuring that we deliver care that is sustainable for future generations. By redesigning the medication packaging at source, TTSH has reduced avoidable waste at system-level without compromising patient safety and operational efficiency. We commend TTSH for this effort, and in partnering with NEA to support public awareness and improve healthcare recycling practices nationwide.”

Extending Sustainability into Community Care: PRIME_MEDMatch

Beyond medication packaging, NHG Health is enhancing sustainability through responsible medication stewardship in the community. Its Population Health’s Community Health Teams (CHTs) and TTSH have piloted PRIME_MEDMatch (Project to Reduce the Impact of Medication Wastage on Environment in Community Care), a programme that safely redistributes eligible unused medications to suitable recipients.

During home visits, CHTs identify medications that are no longer required by patients and assess the medications against strict eligibility criteria. Only medications with intact original packaging, appropriate expiry dates and verified storage conditions are considered for redistribution. Common ones found suitable and frequently prescribed for chronic conditions, include gastrointestinal medications like omeprazole; laxatives like senna; and oral diabetes medications such as metformin.

All eligible medications undergo clinical review and are documented before being matched to patients with same prescriptions, in accordance with established governance protocols. This ensures traceability and clinical oversight for better patient safety.

Conducted from March 2025 to February 2026, the pilot programme:

- Collected 44,104-unit doses across 124 types of medicines
- Successfully matched 3,869 medicines to patients with corresponding prescriptions, reducing wastage
- Avoided approximately 89.5 kg of carbon emissions, equivalent to one return flight between Singapore and Kuala Lumpur¹
- Recorded no adverse events following redistribution

The pilot also identified medication categories with higher carbon impact and generated insights on reducing oversupply and stockpiling. NHG Health is now exploring opportunities to scale the programme across the cluster, subject to further evaluation.

Recognising Staff Leadership in Sustainability

During the Earth Day event, TTSH launched its TTSH Sustainability Report and Roadmap. The Healthcare Sustainability Roadmap 2030 sets out the hospital’s approach to sustainable healthcare.

With a 2030 goal of improving energy and water efficiency by 10%, and reducing waste by 30% across the whole campus, TTSH is making steady progress. Its efforts are anchored in four key areas

that will translate sustainability into practical actions across the hospital. *(Refer to Annex 1 for details)*

To recognise these initiatives, the hospital has introduced the inaugural TTSH Sustainability Awards, including the Eco Impact Award and the Sustainability in Everyday Practices Award. *(Refer to Annex 2 for details)*

One example is Ward 3A's ICU, where nurses are actively recycling by segregating plastic aprons, irrigation bottles and other disposables for processing into resin. Since May 2024, recycling has grown from zero to 955 kg annually, avoiding an estimated 2,865 kg of CO₂e, equivalent to about 15 round trips between Singapore and Ho Chi Minh City¹. Today, more than 85% of nursing staff are participating in this effort.

Adjunct Professor Tang Kong Choong, Chief Executive Officer, Tan Tock Seng Hospital, said: "Sustainability in healthcare is not driven by a single initiative. It is a mindset that shapes how we design care, make decisions, and use resources daily. While our Healthcare Sustainability Roadmap sets the direction, real impact comes from building a culture of staff-led innovation and empowering our people to rethink and redesign everyday processes, from packaging to prescribing. That's how we achieve meaningful change at scale. It is also how we ensure that caring for patients extends to caring for the environment."

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About Tan Tock Seng Hospital

Tan Tock Seng Hospital (TTSH), an anchor hospital of NHG Health, is one of Singapore's largest and pioneering multidisciplinary hospitals. TTSH has a dedicated healthcare team of over 11,000, operates more than 2,000 beds, and provides care across more than 60 clinical disciplines.

It is home to NHG Health's National Centre for Infectious Diseases (NCID), a 330-bed purpose-built facility designed to strengthen Singapore's capabilities in infectious disease management and prevention. TTSH also helms HealthCity Novena, Singapore's first integrated healthcare hub spanning 17 hectares.

As part of NHG Health, TTSH is committed to empowering individuals in Central and North Singapore to lead healthier lives, transforming care through innovation, research and clinical excellence to add years of healthy life to the community.

Annex 1

TTSH Healthcare Sustainability Roadmap Our Four Action Areas

To translate ambition into action, Tan Tock Seng Hospital focuses its sustainability efforts across four key areas, representing where hospitals can make the greatest environmental impact, while ensuring that patient safety, care quality and operational reliability remain central.

Together, they provide a clear and practical framework for integrating sustainability into everyday decision making across the hospital.

Rather than treating sustainability as a standalone notion, these action areas guide how initiatives are identified, prioritised and implemented across clinical, operational and infrastructure domains.

<p>Resource Optimisation & Waste Reduction</p> <p><i>To create a circular economy within TTSH, minimise waste to landfill, and establish a culture of responsible resource use.</i></p> <p>Healthcare delivery requires significant amounts of resources, materials and consumables. This action area addresses how these inputs are managed throughout the hospital, emphasising waste reduction at source, better segregation, and increased reuse and recycling where safe and appropriate. By optimising resource use, TTSH minimises environmental impact while enhancing operational efficiency.</p>	<p>Digital Transformation for Sustainability</p> <p><i>To achieve paperless operations where possible and optimise healthcare delivery through digital solutions.</i></p> <p>Digitalisation plays a critical role in enabling more sustainable healthcare. This action area looks at how digital tools and workflows can reduce reliance on paper, minimise carbon emission from avoidable patient travel, and improve efficiency and access to our services. Digital transformation supports sustainability goals while enhancing patient and staff experience.</p>
<p>Green Infrastructure & Energy Management</p> <p><i>To reduce energy consumption, increase renewable energy usage and create smart and sustainable facilities.</i></p> <p>Hospital buildings are among the most energy-intensive facilities. This action area promotes sustainability at scale through energy-efficient infrastructure, improved cooling and building systems, cleaner energy sources, and lower-carbon transport solutions. These efforts support long-term reductions in carbon</p>	<p>Sustainability in Clinical Practice</p> <p><i>To integrate sustainability into clinical protocols while maintaining clinical effectiveness and patient outcomes.</i></p> <p>Clinical care sits at the heart of healthcare sustainability. This action area explores how clinical practices that have a significant environmental impact can be re-designed through evidence-based approaches, ensuring that patient safety and care quality are never compromised. By fostering strong clinical leadership, sustainability becomes an integral</p>

emissions while ensuring safe, resilient, and supportive care environments.

part of care delivery across wards, clinics and operating theatres.

Annex 2

TTSH Sustainability Awards 2026

Eco Impact Award

This award celebrates initiatives that demonstrate measurable excellence in waste reduction and resource conservation. This category recognises projects that have achieved significant, quantifiable environmental outcomes.

Winner 1

Redesigning for Sustainability: Pharmacy Repackaged Medication Boxes

Winner 2

Environmental Impact of Decommissioning Nitrous Oxide Central Gas Supply – A Quantitative Study on Pipeline Leakage

Winner 3

Reducing Couch Liner Usage in Specialist Outpatient Clinics (SOCs) at Tan Tock Seng Hospital

Sustainability in Everyday Practice Award

This award honours innovative yet practical solutions that successfully integrate environmental sustainability into daily operations. This category specifically recognises initiatives that are readily replicable and can be effectively embedded into routine healthcare practices.

Winner 1

Building Environmental Culture Through Behavioral Nudges in Pharmacy

Winner 2

I-HEAL: ICU Healthcare Environmental Action for Lasting Impact

Winner 3

Every ICU Moment is a Recyclable Moment

Annex 3

PRIME_MEDMatch

PRIME_MEDMatch is among the initiatives aligned with efforts supported by the Centre for Healthcare Innovation (CHI) Sustainability Academy.

The CHI Sustainability Academy supports national healthcare sustainability efforts by equipping healthcare teams with the capabilities to reduce carbon emissions and advance a circular healthcare economy. It provides structured training and tools to help teams integrate environmental, social and financial sustainability into quality improvement initiatives.

PRIME_MEDMatch reflects how healthcare teams are applying these sustainability principles in care delivery and community settings.

For more information, visit www.chi.sg/about-chi-academies/