

Greening Operating Rooms: Compostable Drug Trays Auckland District Health Board, New Zealand

GGHH Agenda Goals

- Waste

Hospital Goal

- Reduce Plastic Waste

Progress Achieved

- Savings, since the compostable drug trays are cheaper than the plastic trays
- The compostable drug trays are made in New Zealand using over 85% renewable energy
- From a New Zealand owned company, providing employment to the community and giving profits back into the New Zealand economy
- Waste reduction: The compostable drug trays are made from a by-product of an existing process
- The compostable trays do not require a dedicated composting waste stream for disposal and will rapidly decompose in the natural environment
- The compostable trays do not burden the environment with micro plastics and plastic micro-fibers, which are accumulating in drinking water and the marine environment
- The manufacturing process is actually carbon negative (one 25g tray sequesters the amount of CO₂ contained in 110m³ of atmosphere)



Fig.1: Example usage of potato tray

The Issue

Patient safety by maintaining a highly sterile environment in operating rooms is paramount. However, it also promotes a culture of single use disposable medical products and packaging resulting in increased waste volumes¹. Based on Australia study, the waste generated by operating rooms accounts for between 20-30% of all hospital waste and 40% of this waste is potentially recyclable².

The anesthetists at Auckland DHB (Auckland DHB) have been at the forefront in driving sustainability, changing culture and practice in operating rooms (OR) as well as other areas business. Their clinical expertise, a deep sense of responsibility for the environment have resulted in a number of new initiatives and earned this group of highly motivated team considerable respect and gratitude from service managers across the organization.

One such initiative led by the anesthetists was the use of hard plastic drug trays used both in OR and ward setting. Approximately 175,000 plastic drug trays annually were being used across Auckland DHB. Whilst the trays could be recycled, most were not being disposed of appropriately and sent directly to landfill.

The Women's Health OR team wanted to move away from single use plastic and identified a suitable, 100% compostable alternative from potato starch by earthpac™.

Sustainability Strategy Implemented

The hospital covers 316,000 m² of floor space with approx. 1500 beds and 42 operating rooms the Auckland District Health Board (DHB) it is one of the largest health service providers in New Zealand delivering services to over one million patients per annum. It is a high-end user of water, air travel, transport, procurement, pharmaceuticals and waste. The Board has a deep sense of responsibility towards its community in health prevention and protecting the environment for future generations.

It prides itself as being a socially responsible organization and since 2015 has been driving an active sustainability program in its commitment to reduce the environmental footprint through energy efficiencies, waste minimization, innovation, technology, education, and a change in culture that embraces sustainable practice.

Implementation process

The Women's Health OR team conducted considerable research into alternative drug tray that reduced emissions and minimized the environmental impact. They made enquiries concerning materials, manufacturing processes, security of supply, transport and end of life/disposal.

A locally made product was identified manufactured in NZ made from potato starch and 100% compostable. The manufacturer supplied the sample product for the pilot. The OR team tested the drug tray in the live environment and found the product suitable for an initial pilot. Other OR services were informed of the pilot and were also included in the pilot study. The 3 OR services involved in the pilot study were Women's Health, Children's Health & Adult Services, involving 22 out of 42

¹ Medical Plastics Recycling in the OR, Practice Greenhealth, Greening the OR

² A Survey of Anesthesiologists' Views of Operating Room by Forbes McGain, MBBS, FANZCA, FCICM, Stuart White, FRCA, BSc, MA, Simone Mossenson, MBBS, FANZCA, Eugenie Kayak, BSc, MSc, MBBS, FANZCA and David Story, MBBS, BMedSci, FANZCA, MD

theatres. The teams agreed to meet regularly to discuss the products applicability and robustness within the OR setting.

The supplier was informed on progress and further modifications of the drug tray were made to replicate the existing plastic drug tray.



Fig. 1: Staff holding the compostable tray

Tracking Progress

No adverse patient risk was identified nor was there any impact on the sterile environment within the theatre from the use of the earthpac™ product. The drug tray met the clinical requirements within the OR and all clinical teams who were included in this pilot endorsed the earthpac™ product as being a suitable alternative to the plastic drug tray.

Post implementation monitoring of the earthpac™ products show a greater up-take in ORs but intermittent throughout wards and other clinical teams. This was attributed to order clerks not being aware of alternative earthpac™ option. Further engagement was undertaken and this resulted in the hard-plastic trays being delisted from the product catalogue list and the earthpac™ product being the first item of choice.

Challenges and lessons learned

Sustainability is an interdisciplinary matter which should be assessed from all possible perspectives - from energy, water, and materials used in manufacturing to where the product ends up after its end of life use. Working with the manufacturer, supplier, waste provider and processor helps build trust, identify solutions and a more unified approach that will protect the patients, our wider community and our environment.

Small ideas that lead to change in practice can have massive positive impact when implemented in large hospitals like Auckland DHB. These types of ideas can in turn have impressive positive impacts for our environment.

Positive engagement and encouraging sustainability champions to lead initiatives not only strengthen the bonds between colleagues that create a shared vision and goal but also provide opportunities for research, sharing knowledge and expertise across different disciplines that are exist within a hospital setting.

Next Steps

The earthpac™ drug tray was evaluated by all three OR teams for fit-for-purpose, functionality and handling of the tray during normal OR procedures. The findings revealed the earthpac™ tray met all criteria with no variability in function, durability or clinical safety when compared with the plastic tray. The findings were presented to various clinical product coordinators and Product Management Committee responsible for determining clinical-related product. The OR teams gave a recommendation that the organization replace plastic drug trays with earthpac™ drug trays.

The recommendations were accepted and the hard-plastic tray has now been removed from the product catalogue to be replaced by the earthpac™ product as the preferred procurement option.

This initiative has prompted other teams to put forward proposals for other pilots that reduce the impact on the environment. These include the food & paper towel waste composting streams, reprocessing plastic syringes and a project to improve recycling in ORs.

The Demographic information

As one of the largest healthcare providers in New Zealand, we have two main hospitals spread over two campuses, numerous community sites with approximately 1,500 beds and 11,000 staff. It is the provider of healthcare services to approximately 1 million patients per year with approximately 1,500 beds and about 11,000 staff. The NZ population is diverse with a high Māori, Pacific Island and Asian population, ^{growing and aging (65+)} The Board serves a local population of 530,000 residents and provides specialist treatment to people from other parts of New Zealand and Pacific Islands. It is a teaching hospital with a major academic facility.

Quotes:

Dr. Martin Minehan, Senior anaesthetist, ADHB & Project lead for compostable drug trays

“Fortunately our potato trays are EN13432 certified. The trays can be composted in the normal home compost and do not require a commercial composting waste stream. The trays are perhaps one of the most easily disposable products we have at ADHB. You can safely put them in home compost,

commercial compost or general waste. They will completely breakdown within weeks -just like a potato would."

Felicity Pugh, Specialist Anaesthetist, Level 8 Theatres, ADHB

"It's great to have these potato starch trays available to replace the single use, non-recyclable plastic trays which were being sent to landfill. We are also fortunate to be able to send these to a composting facility after use. The starch trays have been well received by my colleagues."

Graham Boyes, Head Anaesthetic Technician; Children's Starship, ADHB

"When Martin suggested drug trays made from potato starch, I was a little hesitant but once we did the trial in the theatre setting, it was a no-brainer. We need to keep pushing the boundaries to explore new products such as these that at end of life can be recycled or composted."

Linda Chapman, Theatre Manager, Children's Starship, ADHB

"We were involved in trialling the drug trays and this was one of the first initiatives as part of the "Greening Starship Project". The separate bins for segregation make it easy to include as part of the food waste stream. It's great to be part of a green team who are deeply passionate about protecting their environment."

Ngaire Sharp, Greenlane Clinical Centre Theatre Manager, ADHB

"We now have the potato trays and the organic bins are in place" This is a great initiative and we feel very proud to lead this change."

Anitha Kuna Sehkarin, Supply Chain Management, HealthSource, Auckland

"This is fabulous Manjula! I am in to support this and this will make a big difference for us."

Richard Williams, EarthPac supplier

"I f we replace all the plastic trays this will save 18,408kgs of waste going to landfill per year."

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