

Eye can recycle

*Piloting a ground-up and multi-pronged
environmental sustainability drive in
Ang Mo Kio Specialist Centre Day Surgery Centre.*

Presented by
TTSH and industrial partners



Eye Can Recycle

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Challenge brought to you by:



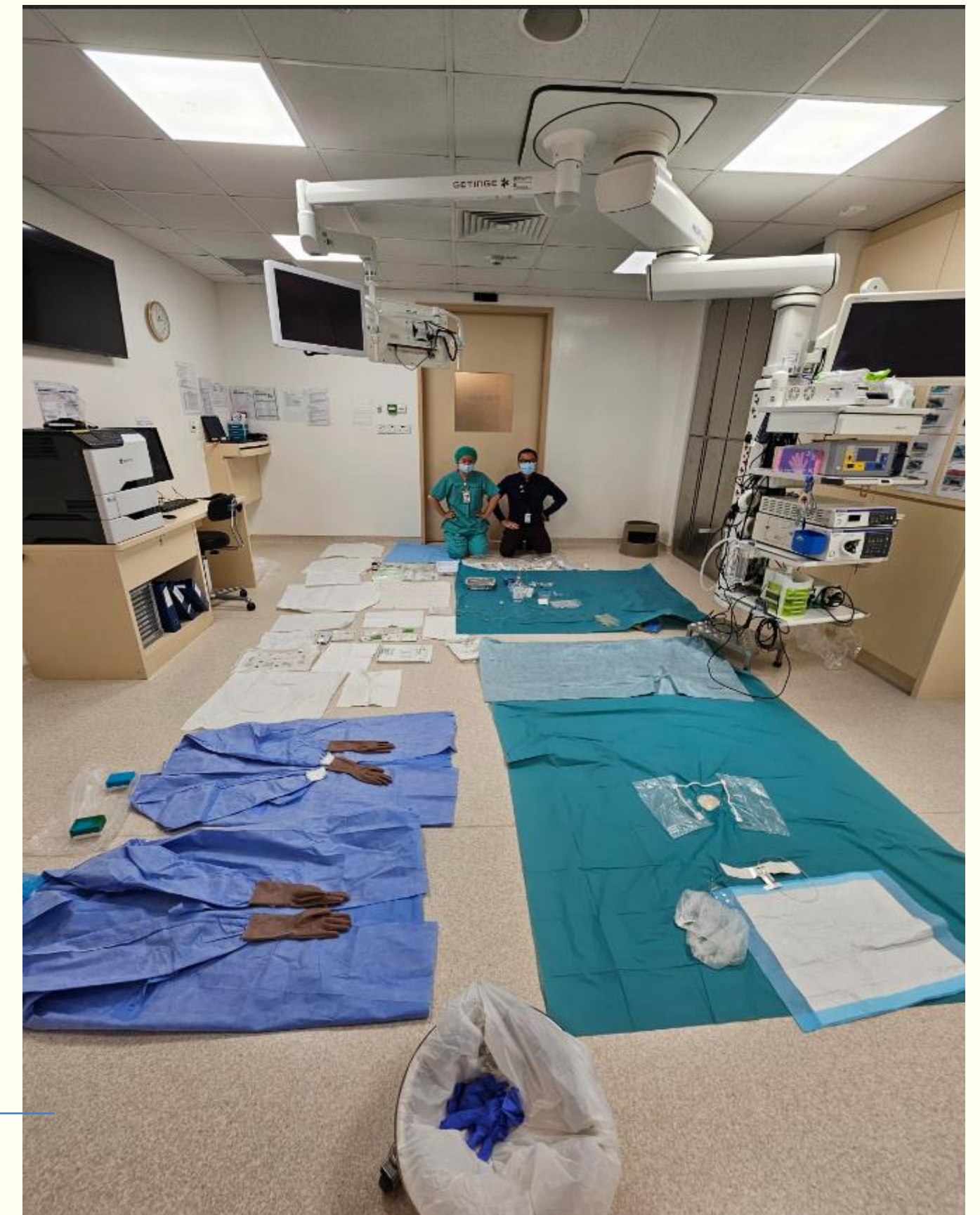
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The Problem

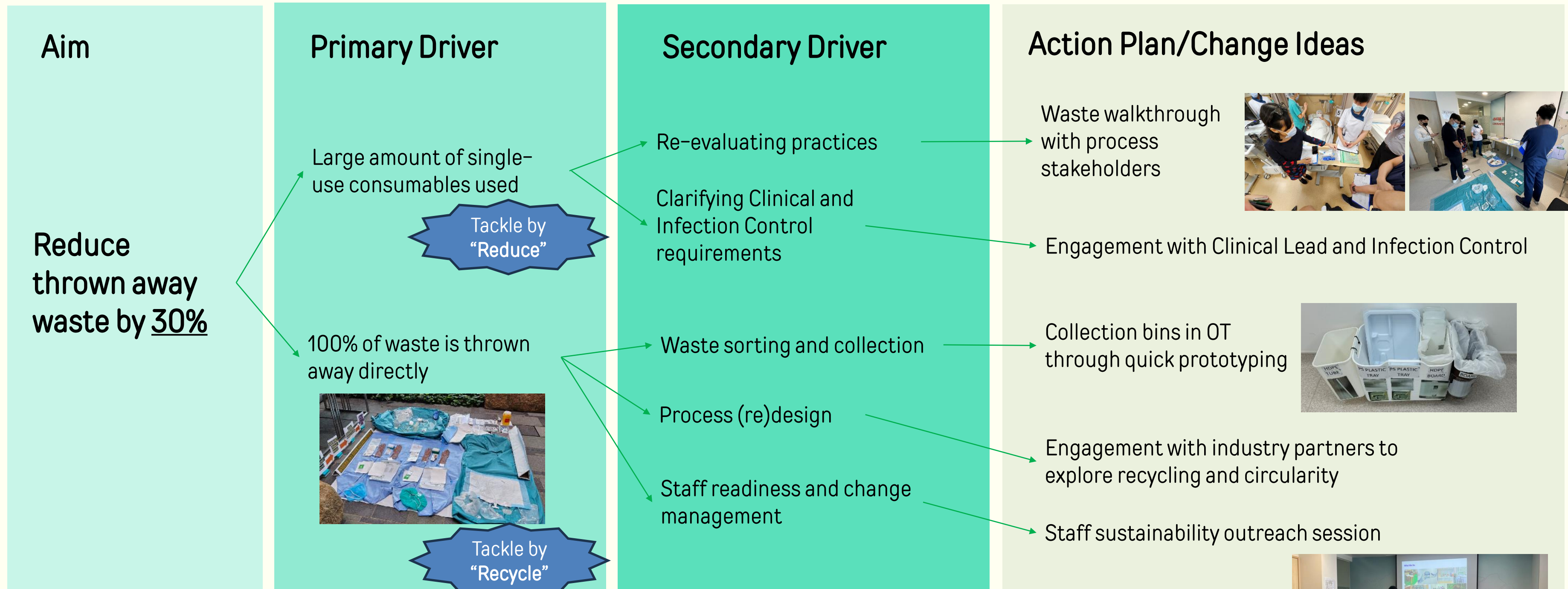
1. Large amount of thrown-away waste generated from phacoemulsification Cataract Procedure, that is going into incineration and landfill
2. Amplified by the fact that Cataract Surgery is the most common surgery done in TTSH with almost 8,000 cases annually (including 2,400 done in Ang Mo Kio Specialist Centre (AMKSC))

3kg of thrown-away waste per procedure. More than 10 times of Aravind Eye Care System in India, which generates only 0.25kg yet delivers the same, good clinical outcome.



Amount of thrown-away waste generated by 1 phacoemulsification procedure for 1 patient at AMKSC

The Approach



Enablers

Innovation challenge

- Matchmaking with Industrial partners
- Seed funding for pilot

SIT Carbon calculation tool (in progress)



The journey (1) Waste Walkthrough

Using a “go and see” (principle of Lean methodology) to identify opportunities to reduce waste

Pre-Challenge:
Conceiving problem statement at
2023 Eye Department Retreat



20-May: Waste Walkthrough
session at AMKSC

Full quorum of process stakeholders
gather at AMKSC to “go and see” and
identify opportunities to reduce waste

- Eye Surgeon
- Anesthetist
- AMKSC Nursing
- Ops/Admin
- Supported by Kaizen rep

Total 16 interventions identified



May: Workflow mapping and
creation of waste list

June: Discussion with other
stakeholders (eg BME, linen,
Optometrists)

13-June: Discussion with
Head of Infection Control,
Dr Brenda Ang

14-June: Endorsed
interventions are
progressively rolled out
8 interventions
implemented or pending
implementation

The journey (2) Recycling and Waste Circularity

Working with industrial partners to operationalize Recycling and Waste Circularity + Change Management

10-14 June: Quick-prototyping of waste sorting bins for AMKSC OT



17 June onwards: Start of waste sorting and progressively improve sorting bins



April-June: Engagement with industrial partners to evaluate waste items and do prototyping

- Semula Asia
- Ipse Ipsa Ipsum



28-June: Sustainability outreach workshop for AMKSC DS Staff by ReThinkGood and Semula Asia

Impact – reduction of thrown-away waste and cost saving

1. AMKSC Cataract procedures will use 784.2kg less single-use consumables annually, saving \$2,117 in cost and 2,310.741 kgCO₂e, equivalent to the CO₂ absorbed by 93 trees annually.

2. Amongst waste that can't be avoided, 2,432kg will be recycled.

3. A total of 3,126.6kg (44.3%) of waste will be prevented from going directly to incineration and landfill every year.

Reduce

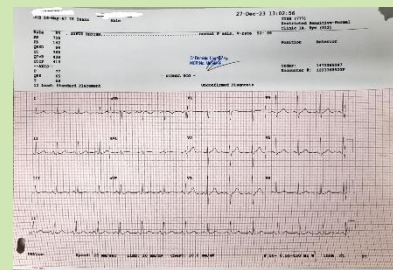
SN	Item	Intervention	Annual weight of thrown-away waste saved	Emission factor (Production + End of life)	Annual reduction of carbon footprint / kgCO ₂ e*	Annual cost saving
1	ECG printout	Eliminate	12kg	2.772 + 0.296	36.816 kgCO ₂ e	\$17.85
2	Patient sticky label	Use less	24kg	2.772 + 0.296	73.632 kgCO ₂ e	\$220.80
3	Height and weight chit	Eliminate	1.6kg	0.405 + 0.296	1.1216 kgCO ₂ e	\$16
4	Intravenous tray	Use less	130kg	1.715 + 0.296	261.43 kgCO ₂ e	\$456
5	Nail brushes	Use less	127kg	4.260 + 0.296	578.612 kgCO ₂ e	\$1,406.25
6	Drapes and table cover	Use less (reduce size by at least 34%)	489.6kg	2.480 + 0.296	1,359.13 kgCO ₂ e	To be determined
		Total	784.2kg (11.1% of total)		2310.741 kgCO₂e	\$2117

Recycle

SN	Item	Weight of thrown-away waste saved per patient	Annual Weight of thrown-away waste saved	Emission factor	Annual reduction of carbon footprint / kgCO ₂ e*	Annual cost saving
1	Plastics and paper	0.35kg	840kg		To be determined – under evaluation	
2	Woven materials	0.63kg	1,502.4kg			
	Total	0.98kg	2,342.4kg (33.2% of total)			

*Carbon figures are preliminary and will be verified with the development of the future carbon calculation

Reduce



ECG Printout



Patient sticky label



Height and Weight chart



Intravenous tray



Nail brushes



Table cover and Drape (reduce size)

0.327kg/
patient

Recycle



PET Trays



PE Bags



HDPE Tube



PP Bottle



PP Tray

Plastics

0.35kg/
patient



HDPE Board



PS Eye Shield



Paper tray



Paper

Paper Sheet



Paper Boxes

0.626kg/
patient



Surgical gowns

Woven



Table cover



Patient Drape

Impact – increased staff sustainability awareness

Sustainability outreach workshop by ReThinkGood and Semula Asia helps staff understand where the recyclables go next. It also inculcates awareness on environmental sustainability, life cycle thinking and recycling.



Next steps

1-year plan

- *Replicable project methodology*
- *Unaddressed AMKSC opportunity gaps*
 - *Other AMKSC workstreams*
 - *Staffs' general waste*
 - *Pooling of recyclables to meet critical mass*
- *Main TTSH Cataract Surgery*
- *Business-viable circularity solution – what best item to make with our recycled materials?*



3-years and beyond

- *Other surgery types in main TTSH*
- *Other care settings eg SOC, inpatient ward*
- *Carbon Calculator for ease of impact tracking and reporting*





Thank you for sharing our journey, begin yours today!

