

Green Inventory: Medical Resource Management

Opportunity showcased:



Seamless integration into workflow

Sustainability improvements should not be an obstacle to patient care and impede existing workflows.

The seamless integration of solutions into current practices not only encourages staff adoption, but also has the potential to make work easier when processes are optimised.

In this project, the NUS team closely considered the endoscopy team's behavioural traits to spur effective change regarding optimal supply usage and awareness of stock tracking.

Other opportunities shown:



Tackle systemic waste at its roots

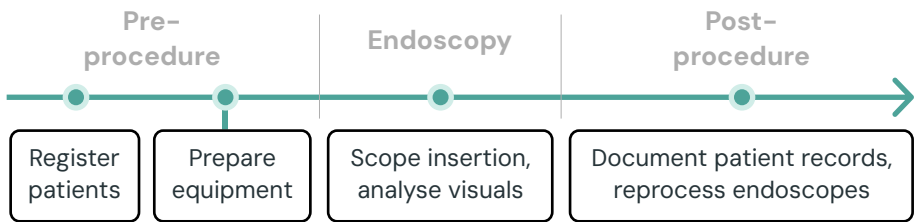


Use visual cues for behavioural change

PROJECT CONTEXT

Inventory management of medical supplies is key to the functioning of the endoscopy department. However, inventory management has posed a challenge with untracked items expiring over time, resulting in wastage.

CURRENT ENDOSCOPY TIMELINE/FLOW



Inefficient inventory management, expiring supplies



Location:

- Supplies room

Processes:

- Retrieving items
- Vendor stock-taking
- Stock replenishment

Stakeholders involved

- Endoscopists
- Healthcare Assistants
- Nurses
- Supply Vendors
- Housekeepers

Research Approach

EVERYDAY ACTION STEPS

ACTIVITIES DONE BY TEAM

INSIGHTS IDENTIFIED

Talk to people

Interviewed endoscopist for initial insights

Expired medical supplies is a pressing issue



Take a look around

Observed:

- Endoscopy procedures
- Supplies room and its inventory system
- Process of ordering supplies

Supplies tracking is disorganised

Staff communicate with suppliers using hand-written notes



Build quickly

Ideated & created low-fidelity prototypes



Brainstorm together

Co-created solutions with endoscopy staff in workshop

EEFO (Earliest Expiry First Out) rule not followed, items of varying expiry dates are jumbled



Gather feedback

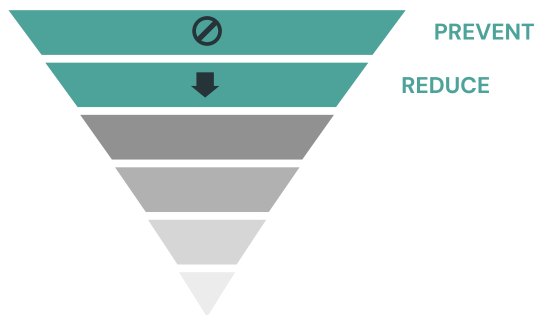
Designed and tested solutions

Design Challenge

How might we streamline the ordering, sorting, retrieval, and restocking routines to minimise expired items and improve workflow of endoscopy staff?

Design Solution

The team's design solutions aim to **prevent** supply wastage arising from items being forgotten and left to expire.

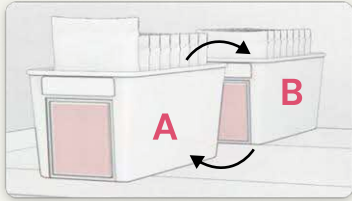


They also aim to **reduce** time wasted during the supply restock and replenishment process.

Design Solution 01

Colour-coded Dual Bins

2 bin Kanban system with demand-tracking coloured cards.



2 BIN SYSTEM USAGE:

- Use items from A until empty
- Replace A with B
- Replenish A as B is being used

WHITE

Normal demand:
standard restock at
usual PAR level*

GREEN

Low demand:
restock below
PAR level*

RED

High demand:
restock above
PAR level*

*PAR = Periodic Automatic Replenishment

Consider this!

Can you **Integrate solutions seamlessly into workflows?**

Sustainable solutions that also improve existing workflows benefit the staff who use them daily.

Innovations that make the lives of others easier facilitates seamless implementation amongst busy teams.

Solutions like the colour-coded dual bins are non-intrusive and easy to implement, helping to streamline the workflow of Healthcare Assistants.

Problem Addressed

Staff do not have to waste time hand-writing memos to communicate stock demand to suppliers.

Product	Description	Status
LAUNDRY SOLUTION	LAVAGE SOLUTION APPLICATION	Order status: In stock / No order
	Drape sheet	Order status: In stock / No order
V.10-04-001-8	Brushset	Order status: In stock / No order
V.50-01-004-8	Washcloth	Order status: In stock / No order
V.760-09-001-8	Towel	Order status: In stock / No order

How?

Coloured cards are inserted into bins to indicate the level of item usage.

Stock ordering is streamlined as the visualisation of stock demand via coloured cards ensures quicker, accurate restocks.



"It's really organised, and motivates me to maintain it since it's easy to find things."
 > Healthcare Assistant, Nita

Design Solution 02

Cabinet Visual Prompts

Adding EEFO (Earliest Expiry First Out) labels in drawers and bins in cabinets provides visual guidance, organising supplies by their expiry dates.

PROBLEM ADDRESSED

Medical supplies in drawers are now organised and sorted by expiry dates. Staff are facilitated to adhere to EEFO rule when retrieving items.

OUTCOME

Improved staff adherence to the EEFO retrieval rule ensures that supplies with earlier expiry dates are consumed first. This reduces waste arising from items being forgotten and left to expire.



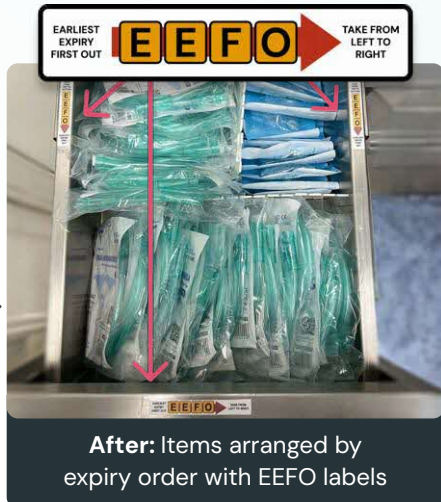
Consider this!

Can you **Tackle systemic waste at its roots***?

**Refer to pg. 72 to know more.*



Before: Items randomly arranged



After: Items arranged by expiry order with EEFO labels

Design Solution 03

Carton Demarcation



Consider this!

Can you **Use visual cues for behavioural change***?

**Refer to pg. 32 to know more.*

Carton boxes arranged by destination locations in demarcated areas.



Before: Unsorted clutter



After: Sorted by destination

PROBLEM ADDRESSED

Staff spend less time looking for items in organised cartons.

OUTCOME

A clearly demarcated carton area makes it easier and faster for external supply vendors and Healthcare Assistants to replenish and retrieve supplies.



User Testing

Reduced time in demand signalling

Colour-coded Dual Bins

The team tested the colour-coded dual bins with nurses, and found that they reduced the time and effort spent on writing individual stock memos.

[2 week testing period]

"The new system is good, will help with retrieval, would be even better if ST Healthcare staff are also informed about this change."
> Nurse, Hana



Increased Adherence to EEFO retrieval

Cabinet Visual Prompts

The team placed EEFO labels in supply cabinets to test if items near expiry (<4 months) were consumed first.

[2 week testing period]

Before: **27** REDUCED INCORRECT
After: **0** ITEM RETRIEVALS (1 DAY)
100%

"It reminds me to follow EEFO, making weekly check-ins easier."
> Sister Kai Xin





Increased Efficiency in Replenishment

Carton Demarcation

To test if the new system increased replenishment efficiency, the team timed the duration of replenishment runs from ST Healthcare staff before and after the carton area was demarcated.

[2 week testing period]

Before:

44 mins

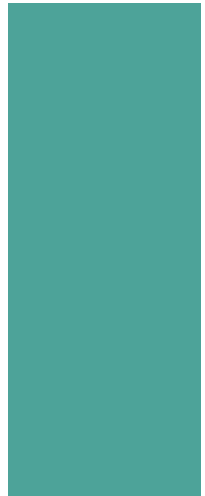
After:

24 mins

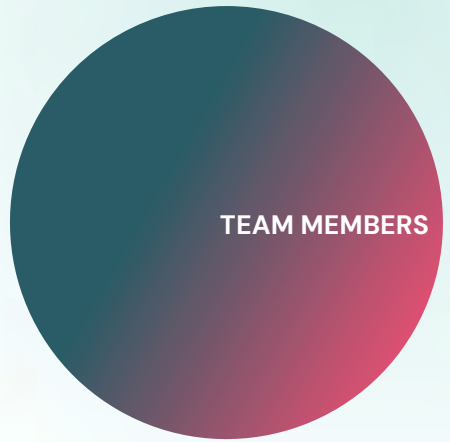
AVG. REPLENISHMENT
TIME SAVINGS/SESSION

20 mins

The new arrangement helps ST Healthcare staff save time. Healthcare Assistants can also locate items faster due to designated carton areas.



**GREEN INVENTORY:
MEDICAL RESOURCE
MANAGEMENT**



TEO SWEE YIN

Swee Yin, an industrial designer specialising in product, service, graphic, and UI/UX design, advocates for a design approach that not only addresses practical needs but also enhances the aesthetic and emotional dimensions of user interaction.

LIU XIN XIN

An industrial designer who's passionate about product, service, UI/UX as well as interior design. She has a simple love for nature and model building, and she likes to observe usual things in unusual ways.

SARAH CHAN

Sarah is an industrial designer with internship experience designing products for medical and industrial applications. In her free time, she enjoys animation and penguins.